THE BOSTON
Medical and Surgical
JOURNAL

VOLUME 189 NOVEMBER 15, 1923 NUMBER 20

Thorndike Memorial Exercises

REMARKS OF A TRUSTEE ON THE OPENING OF THE THORNDIKE MEMORIAL LABORATORY

BY HENRY S. ROWEN, M.D., BOSTON

THE question has been asked,—What has prompted this municipal hospital to establish a research laboratory? The answer is,—To provide the best care for the sick citizen—the basic idea in the establishment of any municipal hospital. The citizens enjoy in police and fire protection a high degree of efficiency and they guard zealously the purity and adequacy of their water supply. We feel that they deserve the same degree of efficiency in the care of their sick. It is a certainty that they come to us in the best of faith; our duty is simple,—we should reciprocate in kind.

The Boston City Hospital was established nearly sixty years ago for the reception of those who required temporary relief during sickness. It has fulfilled its mission faithfully during these years, in providing hygienic surroundings, reasonably good food, and adequate medical and surgical care. Notable men have given freely of their time and energy to the unfortunate sick within its walls; their example is ever before us, worthy of our emulation.

For some time the medical profession and a certain section of the community have felt that this institution occupied a plane lower than other hospitals, privately endowed. The well-to-do looked rather askance at the idea of entering its wards, feeling that the equipment so necessary for scientific care was inadequate. This, perhaps, was not an altogether unreasonable view. Looking backward many improvements and innovations were from time to time added to meet the growing demands of the institution, both physcially and scientifically, not the least of which was the segregation of our contagious cases in one unit,—the South Department, unique at the time,—and a division of our work, in the achievements of which we justly take pride. Our pathological laboratory, now about to be still further enlarged and elaborated, was another notable addition. In the quality of its work it stands without a peer, directed as it is by one whose fame is international. It is not my purpose to review at length our further improvements, save to call attention to certain rather minor innovations, such as the installation of isolation wards, both in the main and south departments, a completely equipped modern x-ray department, and a laboratory designed solely for the study of blood chemistry. Our distinct service maintained for some few years past for the study of pneumonia was an innovation which brought favorable comment from the entire country.

Medical teaching, an attribute to good hospitalization, has been carried on here for many years. The trustees, realizing its elevating influence, have endeavored to widen its scope by affiliating, in a sense, with our leading medical schools. The chiefs of two medical services and two surgical services are professors in their respective schools, while the chief of our contagious department holds a chair in the Harvard School of Public Health. The heads of our pediatric service are, likewise, teachers in their departments. Most of the members of our staff are medical school instructors. We feel that our institution offers a better field than most of the neighboring institutions, as the latter year by year are becoming more private in their clientele, thus limiting in a way their teaching opportunities. Although our association with these two universities is at present quite close, our aim is to ally ourselves still more intimately—firm in the belief, as we are, that a teaching hospital makes for a good hospital. We appreciate to the full that the close relations between the teacher, the student, and the patient make for a better end-result for the sick.

In our endeavors to raise our standards, a cursory examination of the work done by leading hospitals in this country showed them to be, in the main, privately endowed institutions engaged in medical teaching and research, and to this, their preëminence was largely due. Since they found such work valuable and necessary, how much more so is it not needed here, for our duty is more imperative than theirs. It is their privilege to select and restrict the number and kind of their patients; ours, to care for all. Nor are we without precedent in our contemplated work, for, upon the Continent, state and municipal hospitals for some years have occupied this field. The results of their activities before the advent of the World War were such as to command the attention of the whole world.

The time is now at hand when a large proportion of our city population, faced with serious illness, demand hospitalization, not alone for the facilities which the modern hospital offers, but for the fact that modern housing conditions allow but scant opportunities for home care.

We were led to institute medical research here in as a complete and definite way as possible because of the conviction that scientific investigation of medical problems are part and parcel of our work—one of our necessary scientific adjuncts, occupying a place somewhat similar to our x-ray or our pathological departments. We expect from it, as from all services, the best it can produce; with that we will be content.

With entire confidence in the intelligence and ability of the guiding mind at its head, we are confident that fresh vigor will be given to all our work, and that its stimulating progression will attract the best trained men to our staff, both visiting and house; will react favorably on our nursing problems, and, in a word, will raise the whole professional tone of the hospital.

It has been well said that no inherent reason exists why the professional standards of a public institution should be in any way inferior to the private one and, hence, in the dedication of this laboratory, we feel that we are offering the sick citizen opportunities which are justly his.

In all our forward work here it is needless to add we have had, not only the eager and earnest coöperation of our entire staff, but have had the financial backing of mayors and city councils, who have ever been ready to aid us in any measure for the betterment of the sick; interested and generous, they have met our every request.

It may be of interest to state that under our present Mayor and city government funds have been provided for a formal survey of our future needs, and that plans are about to be drawn which will bring our total number of beds up to 1800. This will necessitate new and modern ward buildings, new nurses' quarters, a modern building for house officers, a private pavilion for the visiting men, separate service units for many of the special services, and various other innovations and additions which we hope will bring our municipal hospital to occupy its proper place and function in our community.

In closing, the Trustees desire to pay tribute to our Executive Officer. To his medical vision not a little of our present advance is due. That the hospital today enjoys its well-earned reputation is in no small measure the result of his tact, his patience, and his firmness in administration.

THE THORNDIKE MEMORIAL

BY HON. JAMES M. CURLEY, BOSTON

It is a worthy ambition to desire to be remembered with honor by posterity and gratitude by those who survive us after we have passed out of life; the monuments we erect to our dead and the epitaphs we write upon them only illustrate the attempt of men to put off the inevitable day when they shall be forgotten of earth. Monuments and epitaphs are as futile as records written in water; forgetfulness is the changeless penalty of death; remembrance must be written into the hearts of posterity by good deeds.

This we do know,—that he who, living or dying, by sacrifice and generosity, provides some instrumentality for the service of humanity, in conserving the health and increasing the happiness of his fellowmen, some beneficence for the betterment of the community and the safeguarding of its lives and homes—such a man may snatch from the oblivion of the grave, as long as his beneficence endures and bears fruit, the remembrance, gratitude and honor of the generations he has blessed by his gifts.

This beautiful building which we dedicate today to the memory of Dr. William H. Thorndike and the long and devoted service he gave to this Hospital as one of its medical staff, is not only a memorial to the service and sacrifice of a great surgeon, but is a monument to the generosity and affection of his brother, George L. Thorndike, who provided the funds for the erection of this edifice.

The Thorndike Memorial, with its splendidly efficient equipment, represents the most advanced thought and achievement of modern medical science, and constitutes an assurance of safety for the health and strength of the Boston community that no other instrumentality can. The Thorndike Memorial, with its laboratories and trained investigators is, metaphorically, a clinical citadel, devoted to research, to the study of diseases and their causes, to the acquisition of the knowledge that is power, that is preparedness against an enemy more insidious and deadly than an army with banners; it is a medical armory where the weapons of prevention are forged; a fortification whose garrison is alert, open-eyed, open minded, intelligently inquisitive, scientifically curious, relentlessly at war with disease and its allies,—ignorance, dirt, and decay; and its establishment and operation constitute an achievement that marks it as the crowning glory of the long and honorable life of the Boston City Hospital.

Begun during the administration of Mayor Joseph M. Wightman in 1861, and completed and dedicated to the service of the people during the administration of Mayor Frederick L. Lincoln in 1864, the Boston City Hospital was the first municipal hospital established in America. Beginning with a medical staff of 35 physicians and surgeons and housing 180 patients daily in the first year of its existence, its growth has been steady, upward, onward, progressive, abreast of every year of its life. Receptive to every sane improvement in medicine, hospitable to every constructive and proven method contributed to its administration by science and research, hostile to charlatanry, courteous and helpful to experiment, but skeptical of the claims of visionaries and theorists, its expansion has been sound, safe, solid, and beneficial to the community; and today it has a staff of 145 specialists in the various branches of medicine and surgery, 70 house officers, 225 nurses trained in its own school, two supplementary relief stations, and a convalescent home. In the immediate future we have the Lydia A. Cooper endowment of some $600,000 for general hospital uses, and the health units made possible by the vision and beneficence of George Robert White, to supplement its useful activities.

These, with this splendid Thorndike Memorial and its wonderful practical possibilities in the domain of medicine, make the Boston City Hospital and its constantly widening influence for human good, an instrumentality that should be a source of pride to every Bostonian and a stimulus to the generosity of a community, never parsimonious in its response to every good cause. It is worthy of note in contrast to the 180 of its first year to state that an average of 1200 patients have entered and left its wards daily during the past year, without any reference to the army of sufferers served by its outdoor clinics, which number about 500 a day.

What a marvelous record of achievement in medical science the sixty years of life of the Boston City Hospital covers, achievement more useful than that of all the ages preceding its foundation! In those early days of the sixties, anesthesia and antisepsis were unknown in medical practice. The Civil War, with its terrible death roll from diseases whose causes were only vaguely known and in whose presence medicine was practically helpless, and the surgery, whose operating skill, unrelieved by the mercies of modern agents, was at its best a horror, came and went to swell the roster of death and disability.

Pasteur is a name that stands out in the nineteenth century like a blaze of glory across the skies of science; his discovery of the germ theory was an event equal in importance to any in the history of the race. Lister has entered the Medical Hall of Fame by his discoveries in antisepsis, which have banished the terrors of operative surgery.

These sixty years have seen anesthesia and asepsis revolutionize surgery. Antitoxin, the child of Pasteur's germ theory, has stamped out practically yellow fever, bubonic plague, typhus, typhoid, diphtheria, and plagues and pests ranging in virulence and fatality from sleeping sickness to beri-beri.

These discoveries have stimulated research, investigation, preventive medicine, changing old ways and old ideas, reforming hospital treatment, and aiding recovery by introducing the methods of segregation and isolation, the lesser units in ward construction, and impressing upon all the imperative necessity of cleanliness and the elimination of every source and agency of infection.

The discovery of the x-ray has had an importance that it is difficult to overrate; it is a scientific eye from which nothing is hidden; and it is interesting to recall that it was first installed in the Boston City Hospital, the instrument, crude in its way, being made in the Massachusetts Institute of Technology. It is here in its fullest development in this Thorndike Memorial, with its dangers safeguarded against, so that ample protection is provided for both operator and patient.

The discovery of radium has proved a boon to humanity in its application to medical practice, and its greatest possibilities await the development of scientific research. I will not multiply instances of the tremendous changes and discoveries in this span of wonderful years; I do not care to be guilty of the impertinence as a layman of enlarging on matters familiar to you all; I merely recall the age of miracle we are living in.

I wish only to emphasize the value of the Thorndike Memorial to Boston in particular and humanity in general as one agency in the revolution going on under our very eyes; and to announce the pride I take in being privileged to open its doors and dedicate it to the service of this city.

I have always been intensely interested in the Boston City Hospital and its work and possibilities, and I have sought as far as lay in my official authority to foster its administration and augment its efficiency. Its expansion must always keep pace with the growth of the city, and in order that its onward march may not be slowed up and that it may be ready to face and solve the problems of the future I have instructed the Trustees of the Hospital to ask the Legislature for authority to borrow and spend $3,000,000 for new buildings and equipment for maternity and other pressing needs. The mothers of men are the tap-root of the race; they must be guarded and cared for in the most trying and important function of motherhood; it is the highest duty of society.

The greatest evil of this age and the one that does most to handicap the progress of the world is the waste of men and material everywhere; and I am of the opinion that the doctrine that must be forced into the brain of America day in and day out is the conservation of the gifts of God and the arrest of the spendthrift waste that marks our civilization. The waste of material, even though nature will reproduce much that is destroyed, is criminal, affecting as it does every activity of civilization; but the waste of humanity, as needless as wicked, through disease, sweated industry, child labor, slum conditions, insanitary housing and kindred evils, is the unforgivable sin; and unless this human wastage is arrested, civilization must fail and the Republic pass. Eternal vigilance is still the price of civilization.

The Thorndike Memorial in its best sense is a temple raised to the glory of God, doing for man and his physical being the service the Church gives to man and his spiritual welfare. Its mission is the extirpation of the physical evils that are the outgrowth of ignorance and neglect which destroy the man made in the image of his God; the discovery of the causes and cures of these ills; the protection of human life in all its stages; and the ending by precaution and prevention of the Slaughter of the Innocents,—the terrible death toll of infancy, and the wreckage of physical humanity so frequently reflected in its moral attributes, and which places such tremendous economic burdens on every community.

The dedication of the Thorndike Memorial is without any exaggeration the most important event in the latter day history of Boston; its activities will concern the whole country; its discoveries and achievements will interest all earth and add to the righteous pride and real glory of Boston.

If the medical profession of Boston will continue to live up to its noble traditions and pursue its splendid ideals, which connote a ceaseless endeavor for man and his health, and a constant forward march towards physical perfection, it will be well with the Thorndike Memorial and make secure the honorable fame of its founders.

PROBLEMS UNDERLYING PUBLIC HOSPITAL ADMINISTRATION[*]

BY WILLIAM J. MAYO, M.D., ROCHESTER, MINN.

The opening of the Thorndike Memorial Laboratory marks an epoch in the conduct of municipal hospitals. It is the first recognition by a municipality of the practical value of research, and this recognition in itself is a lasting tribute to the vision and philanthropy of the donor, George L. Thorndike.

The municipal hospital is closely related to the social and economic life of the people. The very necessity for such an institution is an admission of failure properly to adjust the individual to the community as a whole. One might say that poverty is the cause of this maladjustment, and that poverty is due to the vicissitudes of life over which man has little control; yet constitutional inferiority and mental instability, which are to a large extent hereditary, are factors of great importance. Especially is this true of aliens, who have not earned the right to partake of the public bounty, yet fill our charitable institutions. A wise administration of the public hospital must concern itself with the causes which breed sickness, and introduce such beneficent measures as will reduce the number of people whom it must care for at the expense of the taxpayer.

The primary purpose of the public hospital is to give medical care to the sick poor. With few exceptions the medical staff is unpaid, and it follows that, to secure an adequate staff, the hospital must offer scientific advantages which will compensate. In order to attract young medical men especially to its service, the institution must give opportunity for advanced medical education. It should become a school for graduates in medicine, not only in its own service, but also because by doing so the hospital sends forth better trained medical men for the care of the taxpayer, who thereby receives an adequate return for the burden he carries. Just as our school system is conducted at public expense with the expectation of ultimate results in citizenship, so the charity hospital renders service to its inmates at public expense, but ultimately for the good of the community.

American institutions have been based on the British concept, modified to suit the changing conditions of a young country. The British social system is founded on caste, which permits, but does not encourage, change. As a whole, the British people are contented, and even proud to follow their forebears, and have little desire to change caste. This attitude is evident in the British plan of education, which has both good and bad features. Great Britain seems quite content to give to its youth, at public expense, a training in the common branches, sufficient for a self-respecting understanding of life. The British student completes this training at the age of fourteen years. He is highly developed in the doctrine of moral obligation which they call "good sportsmanship," and which we recognize as "the square deal," and this principle of faith has contributed to Britain's great position. The education of the upper classes of Great Britain has been based on the general proposition that nothing which pertains to trade or commerce is truly cultural. Knowledge concerning the anatomy and physiology of plants has been considered cultural, but the anatomy and physiology of man, which has value to the physician in his profession, has not been considered so. It has been difficult to eliminate completely the idea of caste from the American educational system, but little by little we have freed ourselves from the idea that anything used commercially is not cultural, and today the anatomy and physiology of man, and comparable subjects of practical value are given proportionate educational credits with purely cultural subjects.

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[*] Address given at the opening of the Thorndike Memorial Laboratory, Boston City Hospital, Boston, Nov. 15, 1923.

Let me emphasize here, in order to avoid misunderstanding, that what I have to say is in no way a criticism of the British system; in many respects it is better than our own, which wastes so much time on the mentally unfit. The British system has produced great scholars in every line of human thought. The American system seems more disposed to standardize, to try to make each student an exact replica of every other student. The British system permits the more brilliant student to advance beyond those with less intelligence or energy. Examinations in the British universities are conducted more largely, perhaps, to determine the ''quality of a student's knowledge'' than in America, for the British examinations are made along the lines to which the student has given special consideration, whereas in America examinations are still given largely to discover the ''quantity of the student's knowledge,'' as he is often questioned along lines of which he knows little. In Great Britain, the man with special knowledge of certain subjects may apply the excess, so to speak, to offset his deficiency in other subjects. The changes in America from the British plan of education have been made to meet the changing character of the population. Primarily British, the people of the United States were first leavened by peoples of similar origin from northern Europe, but unfortunately, more recently, by peoples from southern Europe. Unconsciously, perhaps, we have thought that by standardizing education we might make of these various discordant elements a homogeneous people.

In one department of education, in the medical schools, the British system, viewed from the standpoint of care of the sick, gives, I believe, better results than that in the United States. The graduates of the British medical schools, while perhaps not so scientific, are among the best doctors in the world. The large majority of British medical schools are connected directly with hospitals. Always is the purpose of the teaching made clear, and the student from first to last never loses sight of the patient. He is imbued with the idea that the profession of medicine is a calling, not a trade. Medical schools in the United States are not so directly connected with hospitals, and have crowded the curriculum with scientific subjects not closely related to the care of the sick.

I have spoken of the educational system in Great Britain and the United States because it applies directly to the American hospital system. Public hospitals have followed the British plan, which is, in general, that only persons who are a liability to the community should have the advantage of municipal hospitalization, thus placing a premium on inefficiency and lack of thrift. Because people in the submerged class in Great Britain continue stationary and satisfied with their condition, they remain from generation to generation a permanent liability. Unfortunately, similar conditions are developing in the United States. Everywhere in Great Britain there are beautifully appointed hospitals for charity patients, but there are none comparable for the upper classes. The taxpayer is left to shift for himself. Sickness to the taxpayer in moderate circumstances too often means changing his status from that of a self-respecting citizen to that of a recipient of charity. His dependent family are embarrassed financially, and face economic disaster. In this latter respect, again, similar conditions are developing in the United States. In response to the oppression of individuals during feudal times, the British law protects the individual to a point where he may become a source of danger to the rights of the people as a whole. America has followed this practice and carried it to excess, British sentiment having become American sentimentality. An enlightened public is gradually taking cognizance of these facts, and is beginning to ask, ''What is this individual freedom of which we have been, theoretically, so proud?'' The man who decrees, for instance, that he and his family shall repudiate vaccination, who asserts that he has the right to have smallpox if he so desires, and appeals to the unthinking and to those incapable of right thinking to follow his example, today receives less sympathy than formerly, because it is seen that he throws a burden on the taxpayer, who represents the people as a whole in the maintenance and care of hospitals for infectious disease, for the benefit of the minority who behave as they see fit, without regard for the majority. Unnecessary sickness, whether treated in a municipal hospital at public expense, or elsewhere at private expense, means a reduction in the number of taxpayers, because reduced efficiency renders the individual unable to carry his fair share of collective responsibility. This fact is not an excuse, but a reason, for public health institutions. It is only fair that if an individual, whether he be poor, self-supporting, or rich, can best be cared for in the municipal hospital, he should have this advantage, not only in his interest, but also in the interest of public welfare. In other words, the charity patient should have as good, but no better care than the taxpayer. There is no reason why persons who are able to pay for their medical treatment should not pay in a municipal hospital, as in any other type of hospital. It is a hopeful sign of the times that many of the more progressive community hospitals are admitting all classes of patients, those who can pay for their hospital care and for the services of their physicians, as well as those who are unable to pay. From an enlightened standpoint, the best economic service a municipal hospital can render its clientele is to spend money freely on research and investigation, with the hope of preventing or reducing sickness, and of restoring more quickly the charity patient to the status of wage earner and taxpayer. The community hospital of the future will be as directly concerned in the social and economic status of its clientele as is the private hospital, and its largest return for money expended will be in the reduction of the number of persons requiring institutional care. Charity hospitals too largely exist for the derelicts, attempting to cure or alleviate end-results of diseases which earlier attention would have prevented from reaching the chronic stage. We should apply to the individual the same principles of prevention which have made such magnificent returns in public health work.

In the Spanish-American War, thirty soldiers died from disease to one from injury, and few of the injured returned to the ranks. So great has been the advance in medical science since, that in the World War the conditions were reversed, not only with regard to disease, but also with regard to the injured soldiers, 85.5 per cent of whom were able to return to the front.

Intelligent communities are giving attention to the insurance of a pure water supply. Pure water has been of great economic value. It has eliminated typhoid fever, thus relieving not only the hospital, but also the community of the support of families left straitened or destitute by devastating illness or death. An adequate supply of pure drinking water has led to prohibition; after Vienna had utilized pure drinking water from the mountains for ten years, the per capita consumption of alcoholic and fermented drinks was reduced spontaneously 40 per cent. While sentiment contributed largely toward prohibition in this country, prohibition was not possible until a supply of pure water was at hand. In the older countries of Europe, water is so unsafe that the prudent traveler drinks the native wine and beer as being the lesser of two evils. These countries cannot hope to have prohibition until their sources of water supply are above reproach. The Panama Canal, viewed in the larger sense, was built by Gorgas. Without his development of a supply of pure water and the elimination of sources of protozoal and bacterial infection, the project would have failed, as it did in the hands of DeLesseps and the French Company.

The growth of means of ready transportation to and from all parts of the world will result in bringing to the United States new forms of disease. The northern islands of Japan, at about the same latitude as the United States, are infested with so-called tropical disease, from which the United States cannot hope to escape. Such diseases will appear in individuals in municipal hospitals, where early detection and care will prevent them from becoming a public health problem. Life is a constant struggle against life. Temporary victory is won over certain types of organisms, but, during the campaign, circumstances and environment may permit a change in the organisms and enable them to attack from a new vantage point, just as paratyphoid fever replaces typhoid.

American institutions are based on a sound theory of equality of opportunity, and however short we may fall of actually insuring each man his opportunity, there is an increasing freedom of choice and an opening of the door of the future to all citizens of the United States. The alien is a public health problem, just as he is a social problem, and the public hospital sees the dark side of this picture. In the American of several generations, the doctrine of moral obligation has become thoroughly ingrained. In southern Europe the Oriental point of view more or less prevails that no obligation which is not enforcible exists. The laxity of the conduct of the law in the United States, the slowness of justice, and the extraordinary latitude allowed the offender against the community, give the criminal more than a sporting chance to escape punishment, and have exposed the administrators of law to the contempt of the class of offenders brought to us in recent years by immigration. And these are the peoples with whom our public hospitals are overcrowded. Our courts have been filled with alien lawbreakers until the people have arisen in righteous indignation and reduced the number of immigrants to 3 per cent of the number already here from each country. If the percentage system of immigration in effect in 1890 could be reverted to, as has been advised, a much more desirable class ~~of citizens~~ would be brought from the countries that gave birth to the United States and its concept of government. The Chinaman has been excluded for a different reason. With ancient civilization, and by a process of survival of those most fit to resist disease-producing conditions, he has developed a remarkable resistance to many diseases, and even thrives under unhygienic surroundings and circumstances that would spell death to the white man. The exclusion of the yellow race from the United States is not a matter of prejudice, but of self-preservation.

Whatever may be the final solution of the immigration problem, it is agreed that unlimited immigration will never again be permitted. Yet it is hard to resist the temptation to continue permitting immigration which brings a cheap supply of labor from foreign countries. The mother countries have borne all the expense of caring for these immigrants during their minor years, and have finally turned them over to us, a more or less complete product ready for our work, but a product so cheaply obtained and so easily replaced that no care has been taken of their mental, moral, or physical condition. Overworked, underpaid, and, when incapacitated for labor, thrown onto the highway for the general taxpayer to support in charitable institutions, exploited foreign laborers have been a great cause of discontent and unrest. Today we reap the whirlwind in sabotage, bootlegging, and other crimes which imperil our form of government, and fill our penal institutions. Yet someone must do the work, or as a nation we shall fall behind. The issue is squarely up to us. If we educate our own people beyond the desire to do manual labor, what is the alternative? In other words, either we must find mechanical substitutes or develop a more efficient Americanization of the immigrant.

Since the Civil War, the average length of human life has been increased twelve years. Were scientific knowledge applied, as much more might be added in one generation. Whereas formerly a man of fifty had difficulty in getting work, today he is an asset in the community. Trained and skilled in the use of highly developed mechanical aids, his rate of production has so increased as to make the foreign-born laborer less necessary. Can America compete in the markets of the world, and pay the high price of American-born laborers? Certainly the American laborer should be protected by good wages, better care, and shorter hours for work, and just as certainly he will compete successfully with the low-paid, unintelligent, short-lived white laborer of foreign countries. Poverty breeds the mental, moral, and physical diseases which disturb our social system.

Investigations with regard to methods of prolonging the life of workmen of both high and low degree is important, and in this work the public hospital has a great field. This form of research has been too much neglected, or has been turned over to privately endowed institutions. We should all show a decent, self-respecting interest in the fundamentals of the economic problems underlying the necessity of caring for people at public expense. Economically, we shall soon reap the reward of our attention to hygiene in public schools. The diseases of childhood which result in the mortality of early life are also responsible for many of the unfit who, later in life, fill our charitable institutions. The effect of the elimination or abatement of these diseases will be most apparent in the prolongation of man's efficiency, for the diseases resulting in degenerative lesions of the heart, kidneys, and vital organs in middle life usually originate in childhood. Common labor will always be derived from the irreducible minimum of low-grade intelligence. Eugenics as applied to man is still in its infancy. During the World War, tests showed that 18 per cent of the young men drafted were not developed beyond the mental age of eleven years. Since our form of government must always be controlled by men of average intelligence, the general average of intelligence must be raised if the standards of government are to be raised. This 18 per cent of citizens in the boy-scout stage of development, mentally too low to be reached by reason, easily led by an appeal to prejudice, and voting solidly, are within 3 per cent of controlling the average election. Our great safeguard, general education, will not aid them or us. Nature has fixed their mental status. This substratum of society presents one of the greatest problems of American citizenship. It will exist long after a proper settling of the immigration question, and will tax the best minds of the future to remedy.

The problem is a many-sided one. It is very encouraging to those who believe in a democratic form of government to see a difficult situation handled in so enlightened a manner as that evidenced in the establishment of the Thorndike Memorial Laboratory. While the large majority of municipalities are satisfied to care for their liability population as cheaply as possible, Boston sets an example in improving underlying conditions. Intelligent expenditure of money, which will help to make the liability population once more self-supporting and taxpaying, is true economy. It is better to expend a relatively large sum for a shorter period of time for the effective care of the indigent sick, than to support them cheaply for life in charitable institutions.

The Boston City Hospital justly holds a high place in American medicine. I have visited this institution frequently since my graduation from medical school, and always have profited greatly, both professionally and inspirationally. It has been my good fortune to learn from the teachings of Cheever, Gay, Post, Burrell, Bradford, Munro, Monks, Watson, Cushing, Nichols, and Thorndike. I wish also to express my admiration for the splendid training school for nurses which the Boston City Hospital has long maintained. Its graduates are to be found throughout the country in most responsible positions as heads of hospitals and nurses' training schools. It is most gratifying to those of us who have profited so greatly by this institution to know that those who follow us will have even greater opportunities than we enjoyed.

The Thorndike Memorial Laboratory marks the recognition by the municipality of Boston of its duty to all the people, not merely the cheap care of its liability population, but a protection of its asset population from the mental, moral, and physical diseases engendered by the liability population. It is an application of the same research principles that have enabled many great industries to live by their by-products. In this time of onerous taxation, better conduct of municipal institutions and more intelligent administration of public affairs are needed more than ever before in the history of our country. Research in medicine appeals to the ideals, and is of more immediate value than research in any other field. A hospital which functions as a school for graduates in medicine, giving advanced scientific training, will enlist the best efforts of the highest type of recent graduates in medicine, and automatically give to its clientele the great advantage of a young, intelligent, and enthusiastic junior staff, who will consider it a privilege to work for the only reward the charity hospital can offer, the opportunity for service and for scientific observation. When their hospital service is ended, these young men will make the greatest return in caring for the sick of their respective communities. The Thorndike Memorial Laboratory will appeal not only to the men in medicine, and improve the quality of hospital service, but it will also enlist from every walk of life the services of humanitarians interested in guarding human welfare.

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ADDRESS

BY TOWNSEND W. THORNDIKE, M.D.

Ladies and Gentlemen:

THERE is nothing that interests mankind so much as to hear about man and what man does. Taking this as my cue, I am going to try in a few sentences to visualize the man who gave to the city of Boston his money to build this beautiful hospital, erected to the memory of his brother and my father, Dr. William H. Thorndike.

In addition, a few words about my father will be appropriate. Although I know little about the life of my uncle, the Hon. George L. Thorndike, I know sufficient to enable me to convey an impression of what kind of a man he was. He was born in 1847, in Salem. His father was a lawyer and a member of the Essex County Bar. As you know, Salem at this time was at its zenith in its great and romantic China trade, and the spirit of "Down to the Sea in Ships" coursed through the veins of almost any hot-blooded boy. Perhaps the first item of interest that I might relate about George is a disagreement between him and his school master, in which his father sided with the teacher. Feeling that he was unjustly treated, he ran away and shipped before the mast on a clipper ship bound for Canton. The next high light in his life was as captain in the engineering corps of the Army of the Potomac under McClellan. After the war he followed the profession of civil engineering. Later he was elected an alderman of the city of Boston. He amassed the money that he subsequently gave to the city for the construction of this building, by wise investments, frugal habits, and leading the selfish life of a bachelor.

I remember him when I was a small boy as a tall, distinguished-looking man, with a patriarchal beard, of severe Puritanical habits, a quick and perhaps fickle temper, with strong likes and dislikes. Combined with his Puritan inheritance, was a strong belief in public institutions, rather than private. He felt that they were safer than private ones because they were more sensitive to public opinion, and this is the reason for making the city of Boston his beneficiary. He was a Democrat of the old school. Although he was in the habit of changing his opinions many times, there was one idea that he possessed which never underwent alteration. This was his great love and admiration for his brother, my father. In order to perpetuate this brother love, he conceived the idea of building this Memorial Hospital.

My father was born in Salem in 1824 and died in 1884. His preliminary training was in the Salem public schools and at Harvard College, where he took an A.B. in 1845. After graduating, he began to read medicine in the office of Dr. Pearson of Salem, as was customary in those days. Later, he entered the Harvard Medical School and graduated in the Class of 1848. He then served as house pupil at the Massachusetts General Hospital. He began the practice of medicine in East Boston, an isolated community, where he was thrown upon his own resources. Thus was developed, as his associate at the Boston City Hospital, Dr. David W. Cheever, has said, "a peculiar roundness and completeness of character usually found only in the country doctor."

In this locality he quickly became one of the foremost doctors. He had been in practice only a few weeks when he performed his first major operation, for the removal of the lower maxilla. During his residence in East Boston, he was in the habit of crossing over Shirley Gut to Deer Island, and at the morgue there obtained material for dissection. In 1866 he removed to Boston proper, and was appointed one of the six visiting surgeons at the Boston City Hospital, which had been opened two years previously. He served in this capacity for a period of seventeen years.

He was a typical New England bred man, and stood for all that such a heritage connotes. He descended from an English ancestor, who in company with Governor Winthrop, in 1633 settled the town of Ipswich, Mass.

He came upon the scene in the days before the development of specialism in medicine, and practiced therefore in all departments of medicine and surgery without hesitation and success. The largest fee he ever got was for a cataract operation on both eyes. He charged $500, but the grateful patient sent him an additional $700 with his compliments. On a journey to Gardner, Mass., he received $100 for tapping a hydrocele. It took the greater part of the day, and he was much criticized for not charging more. This tendency to undercharge characterized his professional life. He had an enormous acquaintance, and for this reason he was much sought after by lawyers as an expert in court. I have been told that it was almost impossible to empanel a jury, but what one or more members of the jurors had had him at some time as a medical attendant. He had a very large practice, indeed, and it is known that he had seen over one hundred patients a day, between his Boston office and his East Boston branch.

He operated in all fields of surgery. Cheever says of him: "Natural taste, acquired dexterity, long practice, had made him a deft, intrepid, and successful operator. He loved his art. With him to see clear was to do. Diagnosis was followed by action. . . . He tied the internal iliac artery behind the peritoneum for secondary hemorrhage from a perforating wound, and the patient lived to attend the funeral of his surgeon. He tied the external iliac vein for primary hemorrhage from a stab, with success. He tied the gluteal artery at its emergence from the sciatic notch for a traumatic aneurysm in the nates. He removed a cobblestone, five inches by three, and weighing two pounds, from the peritoneal cavity, with success."

All these operations were performed in the early days of Listerism, or, as we of today say, "of antisepsis."

Original Articles

AN ANATOMICAL AND X-RAY STUDY OF THE OPTIC CANAL IN CASES OF OPTIC NERVE INVOLVEMENT *

BY LEON E. WHITE, M.D., BOSTON

ONE is often asked why one person out of many having infections should lose his vision while others escape, and why one person should remain permanently blind and another recover spontaneously. This paper is an attempt to answer these queries.

That the osseous canals normally afford great protection to their neural contents cannot be doubted, but when these canals become narrowed and the enveloping sheath of the nerve, or the nerve itself, swollen, the unyielding walls may cause constriction sufficient to produce atrophy. While this fact has been generally recognized, the size of the canal has received scant attention.

Piersol gives the diameter of the optic nerve as from 3 to 4 mm. In a canal of 4 mm., therefore, only a moderate swelling would cause a pressure so severe that degeneration of the nerve would rapidly ensue.

The importance of filming the optic canal to determine adjacent pathology has been emphasized by van der Hoeve. This study was undertaken partially to substantiate his assertions, but more especially to determine if there was any relationship between the size of the canal and the vulnerability of its contents. Many skulls were examined at the Harvard Medical School, thanks to Doctor Harris P. Mosher and the Anatomical Department. The results were tabulated and the size, shape and position relative to pneumatization were noted. Roentgenograms were made of the optic canals in all available cases of optic nerve involvement, old and new, to determine the size and shape in the old cases, and in the new ones to also ascertain any evidence of pathology. As a check radiograms were made of twenty-five supposedly normal individuals. For this x-ray work I am indebted to Doctor A. S. Macmillan. At the end of this paper are detailed reports of fourteen cases, numbered from 35 to 49, to correspond with my previous reports.

Van der Hoeve, after prefacing his remarks with the apt statement that "the diagnosis of an existing sinus disease, especially of a posterior sinus disease, is not always easy—we may say, not always possible, and that the absence of any sign of disease inside the nose is not sufficient to exclude sinusitis from the diagnosis" goes on to say that "we happily have support in the examination with the roentgen rays" and lays especial emphasis on the value of images of the foramen opticum. "If I find a normal foramen," he continues, "I do not believe the canal can be much deformed, but care must be taken not to misinterpret a picture the result of wrong position."

He claims that the great advantage of the method lies in the examination of the ethmoid in posterior ethmoiditis adjacent to the canal, and cites a case of retrobulbar neuritis and choroiditis which, although operated upon for sinus disease several times, was not cured until diseased posterior ethmoid cells were opened which were discovered in a radiogram of the optic canal. "Thus we see," he says, "that roentgen photography may be of great support in the diagnosis of sinus disease and yet there are cases (he wisely adds) which are not discovered even with roentgenography." In concluding this phase of his paper van der Hoeve well says:

"All cases must be submitted to x-ray examination by a radiologist experienced in the skia-

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*Read before the American Laryngological, Rhinological and Otological Society, at Atlantic City, May 11, 1923.

graphy of the nasal sinuses. But even x-ray examination is not infallible so that in the presence of serious orbito-ocular trouble such as optic neuritis, for example, the only satisfactory method of excluding suppuration of the sphenoid and posterior ethmoid cells, the sinuses most likely to set up eye disturbances, is to open them."

Up to the present I have been able to find but little evidence of pathology adjacent to the optic canal in the x-ray plates. Probably this is due to the types of infections responsible for the neuritis in the cases observed since this study was commenced, as these happened to be largely from tonsil infection. I regret, moreover, that I cannot quite agree with van der Hoeve as to the importance of finding purulent sinusitis adjacent to the canal. It has been rarely possible, in my experience, to discover acute infections within the posterior sinus by the x-ray, while in the chronic cases which show pathology in the film, nature has, I believe, walled off the infection from the nerve.

The important thing to determine in a study of the optic canal is its size and shape, as this is always possible. Adjacent pathology while always sought is not so easy to determine and many cases undoubtedly require surgical interference where it is not evident.

The average diameter of the optic canal is given by Whitnall as from 5 to 6 mm., while Wilbrand and Saenger give the average as high as 7 mm.

The canals were measured in *164 skulls.*

20 of these canals were 6 mm. in diameter.
90 of these canals were 5.5 mm. in diameter.
164 of these canals were 5 mm. in diameter.
20 of these canals were 4.5 mm. in diameter.
3 of these canals were 4 mm. in diameter.
The average diameter was 5.17 mm.

The 5.5 and 6 mm. canals were all round and only two had extensive pneumatization about them.

Seven of the 164 canals of 5 mm. were slightly oval. Four were triangular and but twelve showed extensive pneumatization.

Of the 4.5 mm. canals (twenty in number) twelve were oval or flattened at the top and practically all were from two-thirds to three-quarters surrounded by pneumatic sinuses.

The three canals of 4 mm. were all oval or irregular. Two were nearly surrounded by pneumatized sinuses. The third was in a very dense skull and was probably due to hyperostosis.

The canals were usually found to be round irrespective of the way examined, *i.e.,* by holding them up to the light, by the fluoroscope, or the x-ray. The top posteriorly was occasionally flattened and in a few cases the canal appeared distinctly oval with the horizontal diameter always the larger. These findings differ but slightly from the description given by Whitnall, who says:

"The anterior opening of the canal is oval in outline, the central part circular, and the posterior opening generally considerably flattened from above downwards."

I only occasionally found the posterior opening flattened. At the end of Whitnall's description of the contents of the canal he mentions that "the artery is embedded in the dural sheath on the lower and lateral side of the nerve, and ossification of the fibrous septum between them accounts for the rare abnormality of a 'doubled optic foramen.'" Three of these double optic canals were found.

The hollowing out of the roof of the canal by an extension of the pneumatization of the sphenoid or posterior ethmoid over the canal was found eight times. Pneumatization of the bridge of bone formed by the lateral root of the lesser wing of the sphenoid which separates the optic canal from the superior orbital fissure was noted four times. This is usually found where the canal appears triangular. No optic canal was discovered entirely surrounded by the sphenoidal sinus, although there is such a specimen in the Oxford Collection. Several, however, were nearly surrounded. Early in the measurements it became apparent that excessive pneumatization of the sphenoid adjacent to the canal was usually associated with diminution in its caliber. It seems that extensive pneumatization encroaches upon the canal. I found that Schaeffer had remarked as follows on the point:

"If the root of the lesser wing of the sphenoid bone is partially hollowed out, the optic foramen and nerve are encroached upon."

The vulnerability of the contents in the optic canal, practically surrounded as they frequently were by pneumatic sinuses, many times led me to ask why are not these troubles more frequent? That others have been equally impressed, let me quote Skillern:

"When reabsorption occurs in this direction the sinus encroaches upon the optic nerve, often to such an extent that the nerve comes to lie almost within the sinus cavity. The importance of this anatomical configuration cannot be overestimated, especially in connection with ophthalmic complications resulting from infection of the nerve through inflammation of the sinus mucosa."

Schaeffer along this line also says:

"When the lesser wing and the anterior clinoid process are partially hollowed out, the sphenoidal sinus encroaches upon the optic nerve, and if the pneumatization is extensive the nerve lies, in a sense, within the cavity of the sphenoidal sinus. The clinical importance of this relationship cannot be over-estimated."

The thinness of the bones separating the inner wall of the optic canal from the sphenoid was noticeable in many specimens and in a few dehiscences were found, but as these might have resulted from cleaning the skulls it was thought best not to tabulate them. Suffice to again quote Schaeffer:

"In many cases the nerve and vessels are separated from the mucous membrane of the sinus by the merest shell of bone. Indeed, osseous dehiscences may be present."

The size of the optic canal in infants and children is most instructive. The skulls of forty still-born infants were examined fluoroscopically. Of these it was possible to make out the canal in twenty. In two the canal was oval, and in the rest approximately round. In none was it less than 4½ mm. in diameter.

Thus it would appear that the diameter of the optic canal at birth is nearly of adult size, but very short. There is a rather close analogy between it and the annulus tympanicus. The canal seems to reach adult size early in life judging by measurements obtained from a few children's skulls. Of six canals in skulls from children under three years, four were round and two slightly oval and all approximately 5 mm. in diameter. The four canals from skulls of children seven to eight years old were all round and all of about 5 mm. in diameter. The canals did not appear in these few specimens to be in very intimate relationship to the pneumatic sinuses. Uniformity in the radiograms was obtained by having all the work done by one radiologist—Dr. Macmillan.

Of the fifty radiograms of the optic canal in the normal series five were slightly oval, *i.e.,* the vertical diameter was ½ mm. shorter than the horizontal. Ten appeared oval due to faulty position. The average diameter of all fifty canals irrespective of faulty position was 5.35 mm.

In the twenty-five cases with optic nerve involvement there were twenty-six oval canals, of which only two were considered as due to faulty position. This makes practically 50 per cent. oval as against 10 per cent. in the normal series. Several of these were filmed a second or third time in an endeavor to get correct positions. In ten there was 1 mm. difference between the vertical and horizontal diameters; in the others about ½ mm. In nineteen of these twenty-five the optic nerve was involved. Of the twenty-four remaining canals (*i.e.,* round ones) there was involvement of the nerve in twelve. In the nineteen oval canals with optic nerve involvement, five were bilateral. Twelve were operated upon, one recovered without operation, and in the other where there was no operation, there was no improvement. Of the ten patients with round canals one recovered without operation, six had intranasal operations, and in three the tonsils were removed.

The measurement of the optic canal on the x-ray films in ten cases (4-6-13-23-26-27-28-33-36-42) showed a vertical diameter of 4 mm. or less. Two of these (4-13) were not benefited, or but slightly by operation. One had complete optic atrophy and remained totally blind. This case, by the way, had the smallest canals measured (3.5 x 4 mm.). The fourth refused operation and remained unimproved. Four in whom considerable improvement followed the operation, had marked pallor of the nerve head. The ninth case required a secondary operation, and the tenth one unoperated (because of very poor general health) has had frequent recurrences.

Ten cases (4-7-8-9-24-25-26-34-41-47) had optic canals which in the x-ray film showed a vertical diameter of 4.5 mm. and all but two made excellent recoveries and these two improved somewhat.

In six cases (2-31-38-44-46-49) the x-ray films showed canals of 5 mm. or more vertical diameter, and in all practically normal vision was obtained.

The average diameter of the canals of the patients with optic nerve involvement was 4.45 x 4.92 mm. as contrasted with 5.18 x 5.52 mm. in the normal series. In six cases the right canal was larger than the left, and in four the left was the larger. In every unilateral case the smaller canal was the one involved. When both eyes were affected it was on the worst side. This seems to demonstrate that the smaller the canals the more serious the neuritis.

Schuller notes that "the occurrence of periodic paralyses and periodic neuralgia of the cranial nerves, may perhaps be explained occasionally by the abnormal position or size of the nerve canals."

While but one case of hyperostosis was encountered it should not be overlooked that such a condition might cause loss of vision.

From Onodi, the source of so much valuable data on optic nerve disturbances, the following is quoted:

"Through postmortem findings, Virchow and Manz were able to trace the cause of blindness back to arrested development of the skull in earliest youth, to a premature ossification of the skull, to a hyperostosis, and in consequence thereof an irregular contraction of the foramen opticum and pressure on the optic nerve."

As the optic canal is located between the roots of the lesser wings of the sphenoid, any change in the normal plane of the wings would naturally produce changes in the position and direction of the canal, and while no skulls were found or plates examined which showed this abnormality, it is nevertheless a possibility, Schuller says:

"The lesser wings of the sphenoid which normally run lateral from the median line outward in the plane of the planum, sphenoidale (that is, in a horizontal direction) show a steep rise directed upward laterally. Corresponding to that, the position and direction of the canalis opticus and the fissura orbitalis superior, are in most cases almost abnormal. Due to the fact that the course of the lesser sphenoid wing is also directed upward, a kinking or a narrowing of the lumen of the canalis opticus may result, since the latter lies between the two parts of the former."

There is one other condition—scaphocephaly—wherein optic nerve disturbances may depend on the peculiar shape of the head and where roentgenograms greatly aid in diagnosis, as they often show signs of craniostenosis.

The following is Dr. Macmillan's description of the correct position for filming the optic canal: The position in which a patient is placed for a radiograph of the optic canal is of extreme importance, as a slight variation in the position would so change the outline of the canal as to render its measurements worthless. Holding a dry skull in the hand and looking at the optic canal through the orbital cavity it is evident that the true shape and size can be seen only when the axis of the optic canal goes through the lower outer quadrant of the bony rim of the orbit. The optic canal in the living can be thrown into this area when the patient is lying face down with the malar bone, nose and lower jaw touching the plate, the central ray directed straight down. If the upper rim of the orbit is allowed to touch the plate, the optic canal will be thrown too high in the bony frame of the orbit and will be distorted. The diameter of an optic canal of 5 mm. would be enlarged about one-half a mm. in the radiograph of a living subject.

Case 35.—F. L. E., 27, referred by Dr. Peter H. Thompson on Oct. 8, 1921, with diagnosis of post-neuritic or secondary optic atrophy. Good general health, no colds, tonsils removed two years ago. Occipital headaches for some years. Four months ago pain commenced about right eye. Felt as though pressure from behind was pushing it out. Vision 20/200 right, 20/70 left. Sees double. Visual fields show contraction both for form and color. Both discs blurred, more marked on right. X-ray report of accessory sinuses was negative; some infection in teeth. Septum deflected to right rather far back, crowding right middle turbinate. Operated upon Oct. 19, 1921. Right middle turbinate removed; ethmoid cells found projecting into nasal cavity. These were broken down quite extensively. From the posterior one a large mass of soft tissue (probably a cyst) was removed. Good sized opening in front wall of sphenoid. Patient progressed favorably. Pains in occipital region relieved and some improvement in vision. April, 1923, vision right eye 20/60, left 20/30. Dr. Verhoeff reported on the turbinate tissue that the upper part was polypoid and moderately infiltrated with chronic inflammatory cells.

Case 36.—R. R., 27, referred by Dr. H. B. C. Riemer on Oct. 19, 1921, with diagnosis of optic neuritis left. Rather poor health, many colds and hay fever; no headaches. Two weeks ago noticed soreness in left eye on movement which continued to get worse. A week ago blurriness when looking straight ahead, but lateral vision good. The blurriness increased until two days ago when vision was finger movements and light perception. Physical, neurological and Wassermann all negative. Septum deflected to right (opposite side from eye trouble) with compensatory hypertrophy of the left middle turbinate. Turbinate very large and obstructive, at places wedged tightly between septum and ethmoidal wall. Films of teeth and paranasal sinuses negative. Disc red and swollen with blurring of edges and tortuosity of veins. Three or four inferior molar roots were extracted but no apical involvement was apparent. Left middle turbinate on removal was found very large. Posterior portion of nose was extremely narrow and a considerable area of the posterior ethmoids was removed before the sphenoid could be reached. The lining of the sphenoid did not appear especially changed. The sphenoidal septum extended far over to the right. The posterior ethmoid was very large and the wall seemed considerably thickened. Pathological report by Dr. Verhoeff showed slight hyperplasia of connective tissue of sphenoid and slight infiltration with eosinophiles. Marked edema of submucous tissue of ethmoid and marked infiltration of latter with eosinophiles and slight perivascular infiltration with lymphoid and plasma cells. Three days after operation patient could count fingers at six inches. In two weeks the disc was less blurred, outlines well defined, color smoky gray, temporal half slightly paler than normal, retinal vessels normal. Vision gradually improved and a month after operation was 20/80; a month later 20/40; and on January 1, 1923, was 20/30. The left optic canal was 4 x 4.5, the right 5 x 5.

Case 37.—G. L. H., 32, referred by Dr. George H. Ryder on March 9, 1922, with diagnosis of retrobulbar neuritis both. Very poor general health, just recovering from several serious pelvic operations. Six weeks ago first complained of eyes being lame and sensitive. Was unable to see things clearly; vision fingers 2 feet right, 1 foot left. At present they are sensitive to strong light. No headaches, but tired and dizzy. Can distinguish with difficulty people across the room. Fundus practically normal, possibly slight temporal pallor. Septum was deflected rather far back somewhat crowding right middle turbinate. Condition of eyes was thought, however, to be due to infection from pelvis and the prostration following operations, so nothing but mild nasal treatment was advised. Neurological examination by Dr. Ayer while practically negative mentioned the possibility of a brain tumor.

Comment: This case is reported to emphasize the importance of not operating on patients of this type. The woman's mental condition was very much upset. The physical condition was at the lowest ebb and anything in a surgical way would have been a grave error. She was later seen by Dr. Verhoeff who considered her trouble largely hysteria. Vision has gradually improved and on September 10, 1922, was 18/200 right and 18/100 left.

Case 38.—G. N., 19, referred from the Eye Clinic by Dr. Hatch on March 22, 1922, with diagnosis of choroiditis with optic neuritis left. Good health except persistent head colds. When awaking two weeks ago found a black cloud to left and above the line of vision in left eye. When first examined by Dr. Hatch vision was normal. Since then it has been failing so that yesterday it was 20/200, and this morning only the top letter on chart. Large central scotoma. No pain or discomfort in moving eye. Several vitreous opacities. Wassermann negative, as were also the physical and neurological examinations. Septum deflected to the left high up and far back. Left middle turbinate somewhat enlarged and in contact with septum. Moderate obstruction to posterior sinuses. Under treatment with argyrol and adrenalin spray there was rapid improvement and in one week vision was 20/60 plus 2; in another week 20/40; a month later 20/20 plus, vitreous clear, slight blurring of edges of disc remained; six months later vision was normal but fundus still showed a very slight haze. Both optic canals were 5 x 5 mm.

Case 39.—L. G., 18, referred by Dr. Horrax, Brigham Hospital, with diagnosis of retrobulbar neuritis right with question of brain tumor. Poor general health, no serious illness. Has had profuse nasal discharge for ten years. Complains of inability to walk well,—"feet don't seem to go where I put them." Four months ago noticed sight in left eye was very poor. Had to use right eye for reading. This continued for three months. Then right eye began to fail and for past month has been worse than left. During past week her gait has been unsteady and she bumps into things. Considerable nausea for two weeks, also very severe headaches. Was treated at Brigham Hospital. Examination of eyes showed "pupils fairly well dilated; reacting promptly to light and accommodation; moderate sub-occipital tenderness left; persistent nystagmus, coarse to left; ataxia of hands and outward pointing error left; positive Romberg, staggering gait, hyperesthesia, left face; discs outline hazy and optic cups filled with edema: left disc rather pale; veins greatly engorged and somewhat tortuous." X-rays of Brigham Hospital were interpreted as follows: "Stereoscopic films of skull in left lateral position showed skull to be symmetrical; sella turcica itself is normal and there is no definite evidence of increased intracranial pressure; skull very thin; sinuses in A. P. position show a left pansinusitis. Impression, cerebellar tumor. X-ray of skull and sinuses show pansinusitis left. Retrobulbar neuritis left."

Patient was examined by Dr. Quackenboss on April 14th, who reported: "Right disc slightly pale with slight haziness over outer and upper portion; no engorgement of vessels; left fundus practically normal."

She had a large central adenoid and unhealthy looking tonsils with offensive secretion in crypts. The septum was deflected to the right high up. Crusty secretion both sides of nose; Bulla ethmoidalis prominent on both sides. Considerable secretion beneath middle meatus. Ridge on left side in contact with middle turbinate far back. Vestibular test made by Dr. Sargent at the Eye & Ear Infirmary rather pointed to some involvement in the cerebellum. While the examination of this patient showed considerable pathology in the nose, the neurological symptoms were so pronounced that no operation was advised or suggested. She was sent back to the Brigham Hospital where a cerebellar exploration was done. Later developments pointed to a probable diagnosis of multiple sclerosis.

Comment: This case is reported to emphasize the importance of not operating on cases, even with marked pathology in the nose, when the neurological symptoms are so pronounced.

Case 40.—Dr. H. L. S., 32, referred by Dr. Verhoeff on April 14, 1922, with diagnosis of retrobulbar neuritis right. This patient being an eye, ear, nose and throat specialist, was able to give several most interesting points on his case. General health good. In 1917 the vision was 20/10 in both eyes. In 1918 he was subject to colds and intestinal disorder and had a blurring which came on gradually in the left eye, but no attention was given to it. In September, 1920, following an acute coriza there was a central scotoma of the right eye which came on in the evening when he found he could not read his program. Was seen by one of Dr. Sluder's assistants the following day and a double ethmoid and sphenoid exenteration was performed. The right eye cleared up and has been normal up to three weeks ago. He still has a small central scotoma in the left. Three weeks ago contracted a severe cold and has had since then a scintillating scotoma in the right eye. The peripheral vision was practically normal, but he needed a bright light in order to read. Has had a decided ache in the right side of face for past few days. There were numerous adhesions about the right sphenoid, in fact the cavity seemed to be entirely shut off from the nose. Remnants of the middle turbinate right; considerable secretion in the posterior portion of nose; large mass of soft polypoid tissue left, in the region of the sphenoid; pharynx red.

On April 22d, under local anesthesia, the right sphenoid was opened. The anterior wall was of bone and of about the usual thickness. On outer wall of sphenoid there was a soft mass giving way under pressure with cotton swab, probably edematous membrane. Fearing it might be the cavernous sinus it was not probed. In the posterior ethmoid region considerable fibrous tissue was punched out and a small polyp found about which there was pus. In four days the patient reported that the scotoma had lost its brilliancy. Within three weeks the scintillation had entirely disappeared, but there still remained a slight blur. Two weeks later vision was normal and the scotoma disappeared.

Case 41.—I. G., 67, referred by Dr. Minot Davis, on April 27, 1922, with diagnosis of acute retrobulbar neuritis right. Patient in fair health but had a severe cold with pain over and about right eye. Two weeks ago noticed change of vision right. Things became blurry especially in central vision. Could see better on temporal side. Lameness of eye on movement. Excessive discharge from nose. Color scotoma for red and green; vision 2/200. Septum deflected to the right with marked obstruction. Nose extremely narrow on that side. On account of patient's age and rather poor general condition it was thought best to try local treatment. Dr. Macmillan filmed the sinuses and reported anterior ethmoids slightly clouded. Posterior ethmoids and sphenoid clear. Slight clouding of right antrum. Rest of sinuses negative. The sella turcica was unusually small. Optic canals 5 x 5 mm. in diameter. On April 29th, two days after treatment started, the blurriness was less marked. In ten days vision fingers at fifteen feet. In three weeks vision 20/40; in five weeks 20/30 plus; on September 26th both eyes were the same, that is, 20/30 plus.

Comment: This case, while fairly acute with marked blocking of the nose, demonstrates how with a large optic canal it is safe to treat the patient locally. Probably many would recover under treatment as did this case, but with a small optic canal the result might not have been so favorable.

Case 42.—I. P., 60, referred by Dr. Hatch, on June 27, 1922, with diagnosis of retrobulbar neuritis both. Patient has always had poor sight, but ten weeks ago there was a sudden diminution of vision apparently without being connected with any recent infection. Noticed on awaking that he could not see as well as usual. Vision has continued to fail. Has a rather profuse secretion from nose and frequent headaches. Vision fingers at 7 feet; fundi negative; questionable central color scotoma. Polyp right; both antra dark on transillumination; septum fairly straight; both middle turbinates large and obstructive with secretion about anterior end of right one. Dr. Macmillan filmed the accessory sinuses and reported osteoma right frontal sinus and cloudiness throughout right ethmoid labyrinth; sphenoid clear; optic canals 4 x 5 mm. Dr. H. H. Vail made a careful neurological examination but found no evidence of any intracranial tumor. Visual fields showed central scotoma for colors and form and contraction at periphery. Patient permitted removal of polyp but refused any further operative procedure. He was treated locally for several weeks, with some improvement so that within four weeks his vision had doubled. He then dropped out of sight for nine months and on being located by the Social Service was re-examined. The vision had dropped back again to fingers at 7 feet, the same as when first seen. Dr. Hatch found nothing definite in the fundus except possibly a slight atrophy.

Case 43.—F. M. C., 53, referred by Dr. P. H. Thompson on June 29, 1923, with diagnosis of postneuritic optic atrophy both. Rather poor general health. About ten months ago commenced to have pain about left eye and through forehead lasting three or four weeks. This was accompanied by marked loss of vision. Eye sensitive to pressure. Could see half a word on reading the paper. In four weeks was unable to read with left eye. Urine, blood and blood pressure negative. Vision has recently commenced to fail in the right eye and is now, with correction, 20/70; left, fingers at about 1 foot when looking straight ahead but 5 feet laterally: both discs rather blurred; edges pale especially on temporal half; grayish appearance marked on left; some swelling of left disc at upper and outer quadrant. Visual field right showed large contraction for form and colors; small blind spot. Vision so poor in left, field could not be taken. Dr. George x-rayed the accessory sinuses and reported: "We are unable to find any positive x-ray evidence of sinus disease. Possibly there is a very slight increase in density over right antrum and right ethmoid cells. This change is so slight we would not consider it of importance unless there is some clinical evidence pointing to these regions." Both middle turbinates hypertrophied: septum deviated to right high up and far back. Dr. Coriat reported: "No evidence in neurological examination which would lead me to make a diagnosis of brain tumor. Also examined x-ray plates of Dr. George and in addition to findings which you already have I noted slight mottling in frontal region, but as there was no erosion of inner table of skull and no widening of suture fissure or venous canals, I do not consider this of any pathological significance."

Under general anesthesia on July 7th, assisted by Dr. Vail, both middle turbinates were removed and the front walls of both sphenoids opened. The tissue on the front wall of the sphenoids seemed very thick. Both posterior ethmoids uncapped; no packing; rather free hemorrhage which persisted during afternoon and which required the use of thromboplastin on the left side. Patient otherwise progressed favorably while at the Infirmary and was discharged six days after the operation with improvement in vision and apparently in very good general condition. During her six days' stay at the Infirmary she ran a normal temperature and except the moderate bleeding during the first six hours, there was no complication whatsoever. The patient was taken suddenly ill on July 16th, nine days after the operation. Her family doctor told me she seemed to be greatly prostrated, a condition which he attributed to her heart She failed to respond to the ordinary heart stimulants and passed away within 48 hours, there being at no time any elevation of temperature or any symptoms pointing to meningitis or sepsis. The specimens removed by Dr. Verhoeff were reported on as follows: "Both turbinates show an increased number of fixed cells in the submucosa and slight infiltration of this layer with lymphoid cells. The left turbinate in places shows submucosa converted into hyaline tissue with stellate cells."

Comment: This case being the only one where a death followed even remotely an operation on the sinuses, seems worthy of some comment. The eye condition was desperate and it was not felt that the operation was an especially hazardous one. Her general condition was not of the best but no worse than many undergoing operations in the daily routine of the hospital. The cause of the death is still in doubt. The possibility of an embolus should be considered, although the family doctor said he did not think symptoms pointed that way. Meningitis and septicemia are out of the question. There might have been some intracranial condition,—tumor or abscess, or a cerebral hemorrhage which latter was given in the death certificate as the cause.

Case 44.—P. E. F., 43, referred by Dr. Walter Lancaster on November 24, 1822, with diagnosis of retrobulbar neuritis right. Poor health. For some months has been totally incapacitated. Considerable pain through head for past six months. Eyes have felt strained and pained badly at times. Feels as if it were about to drop out. Dizzy for last three or four days. Subject to colds and frequent attacks of tonsillitis. Dr. Lancaster reported that during the past two months patient "had developed an ill defined central scotoma especially for colors in the right eye; also a marked tendency to spasm of the accommodation in that eye. Has suffered from headaches and from a nervous breakdown. I do not believe his scotoma is of a hysterical nature, but think a sinus is the most likely cause. I do not believe that the eye condition is urgent and that he may be observed with safety for a few weeks if you consider it necessary. There is also a possibility of pituitary." Vision 60/100 right. Both tonsils were rather small but contained offensive secretion. Polypoid degeneration of the anterior end of right middle turbinate; left middle turbinate enlarged but not degenerated. Sinuses x-rayed by Dr. Macmillan, who could find no evidence of pathology; the sella turcica was normal; optic canals 5 x 5 mm. in diameter. Under local treatment vision improved so that in two weeks it was 60/50 and so remained. Owing to the patient's poor general condition it was not thought wise to remove the tonsils until he was somewhat improved. This was, however, done at the end of the third month. This case is still under observation.

Case 45.—E. O. A., 41, referred by Dr. H. B. C. Riemer on December 22, 1922, with diagnosis of acute retrobulbar neuritis left. Health fair; not many colds or sore throats, but had a severe cold two months ago; eyes rather weak for some years; no headaches but occasional dizziness. On examination by Dr. Riemer six weeks ago vision was normal. Eight days ago things became very blurry in left eye which increased so that at the end of five days vision was fingers close to eye The following day he was totally blind, not even light perception. Marked pain on rotation of eye; blurring of edges of disc and increase in capillaries of the nerve Moderate smoker, no drugs or alcohol. Septum straight; turbinates not especially enlarged or obstructive; tonsils showed marked evidence of disease, offensive secretion removed on suction; enlargement of cervical glands; considerable adenoid tissue. Dr. Macmillan reported: "All sinuses are clear with exception of very slight clouding of left antrum. This, however, does not suggest pus but is probably thickened membrane from some previous infection. Lower right molars both diseased. Upper left central incisor shows area of rarefaction about apex suggesting abscess formation." Right optic canal 5 x 5 mm., left 4 x 5 mm. Patient had the diseased teeth extracted and tonsils removed. Left side of nose was packed with adrenalin and through a long Killian speculum the opening to the sphenoid was made out. Sinus seemed of good size and free from secretion on probing, so it was not opened. One week after the operation patient could count fingers at two feet; in three weeks twenty feet; two weeks after the operation Dr. Riemer reported as follows: "Left disc blurred, most pronounced on nasal half. Outline disc well defined on temporal half; numerous fine white lines radiating from disc on nasal side can be seen in retina." One month after operation vision was 20/50; disc had slight blurring, paler than normal; outline well defined; on nasal side a concentric blurring very close to nerve head. Three months after operation vision was 20/25. This patient is still under observation.

CASE 46.—W. R. F., 35, referred from the Eye Clinic at the Infirmary by Dr. Worthen, with diagnosis of secondary optic atrophy both. Vision 20/200. Fair general health. Five years ago eyes became blurry. Does not remember whether they were lame or painful. Treated by Dr. E. W. Clap, who gave me the following report: "First seen on April 20, 1918. Complained of blur in right eye for two weeks. Vision 20/200 in each eye; not improved by glasses. Central scotoma for green. Pupils small, equal and reacted. Temporal segment of optic nerve white and slightly cupped, edges hazy. Wassermann negative. Smoked to excess. No alcohol. Several diseased teeth. After extraction considerable improvement in vision. January 13, 1919: Vision with correction right 20/40, left 20/70. May 22, 1919: Vision right 20/50 plus, left 20/70, nerves unchanged. January 22, 1921: Vision 20/100 both; tension always normal; fundus unchanged. February 7, 1921: Vision 20/200 both. May 27, 1921: Right 20/200, left 20/50 plus." Some intracranial tumor was suspected when first seen by Dr. Clap and patient was referred to Dr. Clymer, but his examination was practically negative. Dr. Morrison reported that teeth showed active granuloma; sella turcica normal. There was a ridge on the right side of nose with deflection to left high up and far back. Right middle turbinate seemed to be located far back and decidedly obstructive to drainage from the posterior sinuses. Left somewhat similar. Offensive cheesy debris in tonsils. Optic canals were 5 x 5 mm. in diameter. Tonsils removed on February 27, 1923, and septum resected. March 16, 1923: Patient greatly improved in general health and can read one line lower on chart.

Comment: This case is interesting because of the five years during which he has been under observation. Following the removal of the teeth there was marked improvement in vision, then it seemed that some other infection was producing the gradual loss and as the tonsils showed distinct infection their removal seemed to be indicated.

CASE 47.—N. deF., 18, referred from the Eye Clinic of the Infirmary on March 2, 1923, by Dr. Hatch with diagnosis of retrobulbar neuritis left. Good general health. Some eye trouble two years ago when entering this country, but not a neuritis. Present trouble came on suddenly one week ago. Noticed everything was dim when looked at with left eye. No pain or lameness. Recovering from cold with some general headache. When first examined on March 2, 1923, vision fingers at 3 feet; fundi normal. The nose seemed negative. Turbinates of moderate size, no special blocking; septum straight; tonsils large and unhealthy. X-ray of sinuses showed cloudiness and thickened membrane lower part of left antrum; very large sphenoid. Left optic canal 4.5 mm. in diameter; right, the unaffected side, 5.5 mm. Following removal of the tonsils vision improved rapidly. In one week it had gone to fingers at 10 feet and in three weeks was normal. The fundus at no time showed any change.

CASE 48.—B. McL., 39, referred from the Eye Clinic of the Infirmary on March 5, 1923, by Dr. Worthen, with diagnosis of chronic retrobulbar neuritis with secondary atrophy. Slight pallor nasal side both discs; fields show scotoma; vision 10/200 both. Patient in fair health. For past ten years has complained of defective vision of both eyes. Examined in various hospitals, but no cause found for his loss of vision. Wassermann and neurological examinations negative. Complains of constant pain in both eyes, especially when trying to fix upon an object. Nose appeared normal; septum straight; no enlargement or blocking from turbinates. The tonsils, although small, were thought to be diseased. The teeth were very suspicious and on filming them several root abscesses were discovered and a large cyst. Sinuses were negative. Optic canals 5 x 5 mm. The diseased teeth were extracted and the tonsils removed.

Comment: In spite of the long duration of this case it was felt that the patient should receive the benefit naturally resulting from the removal of any purulent focus, but improvement, if any, will probably be slow. It is hoped that further impairment of vision, at least, will not take place.

CASE 49.—K. McL., 19, referred from the Eye side of the Infirmary by Dr. Lancaster, on April 4, 1923, with diagnosis of optic neuritis left. Good general health; occasional colds and sore throats. Had a very severe cold six weeks ago with pain over left frontal and about eye. This was accompanied by flashes of light. Two weeks later sight failed suddenly in the left eye so that at one time she could only see bright lights. On admission to Infirmary on March 23, 1923, vision was 20/70 in left eye. Within a week the vision had improved to 20/40. In the left fundus there was a mild-grade optic neuritis with slight infiltration about disc. Visual fields showed contraction in outer temporal region and marked enlargement of the blind spot. The septum was deflected to left, especially far back, thus crowding the left middle turbinate; tonsils, while rather small, had some offensive secretion and a sensitive gland was found below angle of right jaw. X-ray of sinuses showed very small frontal, ethmoids clear; slight thickening of membrane lining left antrum, but no evidence of pus. Optic canals were 5 x 5 mm. The patient was examined at the Neurological Department of the Massachusetts General Hospital, where she had a lumbar puncture, but nothing abnormal was found. Wassermann negative. In view of the probable infection from the tonsils, and the marked blocking of the left posterior sinuses, it was deemed advisable to operate, although vision had improved considerably. The tonsils were accordingly removed; septum resected; left middle turbinate removed and

a small section of the superior turbinate, which was found hanging closely over the front wall of the sphenoid. On removing this it was possible to probe the sphenoidal ostium. A small amount of secretion was seen about this opening, but I did not deem it necessary to open that sinus, feeling that the correction of the deflection and the removal of the middle turbinate gave sufficient drainage and ventilation. The tonsils were found to be much worse than apparent on examination, considerable pus being removed. One month after operation vision 20/30.

CONCLUSIONS

The normal optic canal is practically 5.5 mm. in diameter. It varies from 3.5 to 6.5 mm. Extensive pneumatization about the canal is usually associated with narrowing. When the lesser wing above the canal is more extensively pneumatized than other regions, the canal is flattened on top. If the region beneath the canal is also pneumatized it becomes oval, while in the rather rare instances where the bridge formed by the lateral root of the lesser wing of the sphenoid is also pneumatized, it assumes a somewhat triangular shape. Any irregularity in the contour of the canal from whatever cause produces a diminution in its caliber, and renders its contents more susceptible to infections from the sinuses surrounding it. It seemed to be a fairly constant rule that the smaller the canal the more extensive the pneumatization. It should also be emphasized that small canals may be round, even though surrounded by pneumatic sinuses so that the shape while not all important usually indicates susceptibility to infection. The films of the canals many times are misinterpreted due to faulty position. The image of the canal should always appear in the lower outer quadrant of the orbit. While the films of only about thirty patients with optic nerve involvement have been studied, the conclusions from these indicate that the smaller the canal the more the danger of permanent loss of vision and the greater the necessity for operation. The size of the canals is most valuable in making a differential diagnosis, for large canals immediately lead one to look elsewhere than in the accessory sinuses for the cause of the amblyopia. This has already proved of great value in two recent cases,—one due to multiple sclerosis and the other to an enlarged pituitary, although both cases had marked pathology in the nose. If future cases substantiate the findings in those already studied, it will mean that a canal of 4 mm. or less in a case of severe optic nerve involvement indicates the necessity for immediate ventilation of the posterior sinuses to prevent permanent atrophy, unless some other definite focus can be found. A 4.5 mm. canal gives greater leeway for study and investigation. Optic atrophy is less to be feared. A 5 mm. canal would probably recover from almost any *acute* attack either spontaneously or under local treatment. Then if some focus of infection is found, **diseased teeth or tonsils for instance, it should be removed as a preventive to recurrences.**

BIBLIOGRAPHY

Piersol: "Human Anatomy," Vol. ii.
Van Der Hoeve: "Optic Nerve and Accessory Sinuses," Annals Otol., Rhin. and Laryng., June, 1922.
Whitnall, S. Ernest: "Anatomy of the Human Orbit."
Wilbrand & Saenger: "Die Neurologie des Auges."
Schaeffer, J. Parsons: "The Nose and Olfactory Organ."
Skillern, Ross H.: "The Accessory Sinuses of the Nose."
Schuller: "Roentgen Diagnosis of Diseases of the Head."
Onodi, A.: "The Optic Nerve and the Accessory Cavities of the Nose." Annals of Otol., Rhin. and Laryng., 1908, Vol. xvii.

MEDICAL EDUCATION FIFTY YEARS AGO

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The thoughts of medical students fifty years ago on the problems of medical education may be regarded as of little worth; like an old almanac, they are out of date. But the problem of training young physicians properly is not yet entirely solved. The medical teacher today has still much to learn from his predecessors and, distinguished as are the scientists of today, it is well to remember that there were great men before Agamemnon.

In the academic year of 1869-1870 two recent graduates of Harvard College enrolled as students at the Harvard Medical School. They were neither of them enthusiastic in regard to their contemplated profession. They had thought of other callings, but were unable to find any which was not even less attractive. They chose the Harvard Medical School because they were both residents of Boston and because they had been told that it was as good as any medical school in the country. If, however, the facts of the case could have been known then, as they are today, it would have been evident that the two young men were entering upon a much more hazardous venture than they realized at the time. Much that they were to be taught was erroneous, much had better be forgotten as misleading. There was a great waste of time and effort, and at the end of their study period they found themselves ill prepared for the responsibilities of an arduous profession. This failure in medical education was partly due to imperfect educational facilities of the day. It is also true that medical science later advanced so rapidly that the art of medical practice was revolutionized.

There was one great lesson, however, which could be learned at the time from the Faculty of the Harvard Medical School. Nowhere could be taught to better advantage the sense of the dignity of the medical profession than in the lecture halls of the old Grove Street building.

In 1869, the Harvard Medical School was properly regarded as an authorized branch of Harvard College. This fact gave it a sanction of respectability which was lacking in some of the over-advertised institutions; for many of these failed to meet the promises of their announced educational opportunities to such an extent as to bring discredit to American medical degrees in general. At the school in Boston, as at a few other leading medical schools of the country, an earnest attempt was made to present, in an interesting manner, the essentials of medical education according to the best opinion of physicians of the day.

The most distinguished member of the Harvard faculty was the well known poet-anatomist, Oliver Wendell Holmes; his literary achievements were so notable and his reputation as a poet and medical essayist so great, that they eclipsed in popular reputation his work as a lecturer in anatomy. He was, however, for the greater part of his active professional life, an unusually successful and painstaking teacher of anatomy. This was his bread-winning vocation; literature was his avocational play. He was one of the first full-time medical professors in the United States at a time when it was almost universally thought that only practicing physicians were competent to teach in medical schools. A successful Boston doctor, who became wealthy by shrewd investments, was disturbed by the writings of Dr. Holmes. He offered to give a large amount to the Harvard Medical School if the authorities would engage a surgeon as Professor of Anatomy in place of a rhymester who, though inexperienced, made bold to teach that doctors were disease carriers to their lying-in patients. The gift was finally made to those planning a new technical school, and the amount given was sufficient to guarantee the completion of the projected plan. Thus the famous Massachusetts Institute of Technology began its important work, while to the Harvard Medical Faculty remained the credit of standing by the bold medical reasoner who first told the world the true cause of puerperal fever. Although Dr. Holmes could make no claim to preëminence as an anatomist he was undoubtedly an able teacher with an unsurpassed power of giving his listeners, through his wonderful gift of words, a lasting interest in his subject. To clothe the dissected cadaver with the quality of beauty, such as was not its possession during life, was the marvel of his lectures. Carl Schurz is said to have mentioned Oliver Wendell Holmes as one of the three most remarkable conversationalists he had met in the course of a life of unusual opportunity for critical judgment—Bismarck and Mazzini being the other two. One of his colleagues bore testimony to the fact that entertaining as Dr. Holmes was in his writings, he was much more so in his ordinary effortless conversation. An incident may be mentioned illustrating Dr. Holmes' happy manner with his students. On one occasion he was a few minutes late, and a member of the restless, waiting class amused himself by rolling a newspaper and throwing it at the head of one of the men at the bottom of the row of the amphitheatre. It bounded into the little arena where Dr. Holmes was to demonstrate his anatomical lecture. This amused the crowd so that a second roll of paper followed. It gave the class much merriment as the attention of Dr. Holmes on his entrance was attracted by the first roll of crumpled paper, and this amusement was renewed as he recognized the second roll. Dr. Holmes, with his natural quickness, picked up the second roll, holding it, turned and looked up to the class, making the following apt quotation, "Insatiate archer, would not one suffice?" His lectures were always delivered to a very attentive audience. He was an unusual lecturer, having to a remarkable degree the ability to make a fact unforgettable through his felicity of description. An illustrative instance may be cited. Describing the bones of the pelvis in a lecture to a large class, he pointed to the tuberosities of the ischium, with the remark, "on these the monarch rests; when enthroned, he views the world." With such a gift of imaginative description it is not surprising that a multitude of students remembered throughout their professional lives many of the essential points of anatomy.

Dr. Holmes' prominence in literature has obscured much of his professional work and it is forgotten that he was the first to introduce into the American medical school the use of the microscope as a part of the regular course of instruction.

Although Dr. Holmes was by nature a conservative, his breadth of mind enabled him to overcome his reactionary impulses. When the question of reforming Medical Education was presented, he at first sided with the conservative majority; but his open-mindedness enabled him to change his opinion; the faculty deadlock was broken, and medical reform began. He also voted for the medical education of women, although he disliked the idea of women doctors. He preferred to side with the younger rather than the older members of the faculty.

Dr. Holmes was once asked which of his writings gave him the greatest satisfaction. He admitted that he prized highly the "Chambered Nautilus." It must also have gratified him greatly to know how much President Lincoln appreciated his "Last Leaf." To have written "Currents and Counter-Currents in Medicine," "Observations on Malarial Fever," and "Puerperal Fever—A Private Pestilence" marked an epoch in American medical literature. In addition to this, it was a notable achievement to have taught the dry bones of gross anatomy for many years to enthusiastically interested classes, and to have proved himself a brilliant medical teacher.

An absolute contrast to Dr. Holmes in character, in intellect and interests, but like him a full-time professor, was the professor of morbid anatomy, J. B. S. Jackson, now forgotten among medical men, but meriting unending gratitude from the profession for his great services in the cause of medical education. He occupied the chair of Pathology, as Shattuck Professor. This endowed chair was given by a friend of his father, Dr. Shattuck, an eminent Boston physician of the early part of the nineteenth century.

Dr. Jackson, or Morbid John, as he was familiarly known by the students, was a much more remarkable man than his pupils or even his contemporaries realized. His zeal in his subject was unsurpassed. His scholarship and training were, considering the knowledge of the day, excellent; his powers of observation acute and well trained; his industry untiring; his singleness of purpose never diverted from the one object of his life—the study of gross human pathology. He was not trained in the use of the microscope, but unlike smaller minds who criticize that which is beyond their reach, he regretted his deficiency and welcomed all later knowledge, confining most of his efforts to the work in which he was most proficient, viz.: the work of collecting and recording all observed pathological facts. Too modest to generalize in narrow theories, and recognizing the limitation of his material, he confined his writings to the catalogue of the Museum, which in a large part through his industry became one of the most valuable in the country. Without assistance, and with most meager facilities, he was always ready to perform an autopsy at the call of any practitioner. In this way he became of great assistance to the medical profession and to his class, in the display of fresh pathological material. Every meeting of the Society of Medical Improvement, as the local and select group of medical scholars was called, was made valuable by the demonstration of some fresh specimen and by Dr. Jackson's remarks. The following is an example: "This specimen is the third I have seen; one in Paris many years ago; a second in the practice of Dr. So and So; and this one. The affection cannot be very rare, and has these characteristics to be noted in this as in the other specimens."

To the medical students and to the general public at large, the most prominent individual at the Harvard Medical School was the professor of surgery, Dr. Henry J. Bigelow. His followers looked upon him as a demigod; to his colleagues he was a great surgeon, and in intelligence and range of ability he was more than a surgeon. In conversation with a friend, he said of himself in a vein of extravagance, that surgery was a bagatelle to him, that his real interest was art. He was, in fact, an interested amateur in art, and experimented in the restoration of old paintings. Whatever he undertook, whether the perfection of an operation, a study of ants, the facial expression of the monkey, or the development of a mechanism, his ambitious desire of complete accomplishment drove him to the perfection of his undertaking. After he had satisfied himself that he had succeeded in his task he would seek some other intellectual quarry. If this quality limited the amount of his surgical output, it gave it its excellence. After developing litholopaxy to its ultimate conclusion and testing its value on an adequate number of cases, Dr. Bigelow, unlike most surgeons, showed no desire to record a large number of cases treated by it. Others could do that; for him there were fresher fields of endeavor. An envious colleague said of him that the praise of man was the breath of his nostrils, but this was hardly a just statement of the facts. Dr. Bigelow desired praise chiefly as an evidence to himself that he had accomplished his purpose to the extent of its recognition. As he once expressed it, the satisfaction which comes from within, is the one really worth while. Dr. Bigelow's writings were masterpieces in matter and style, but as he shunned incompleteness, they were limited in quantity He had a sensitive nature, with a keen desire to avoid inflicting unnecessary suffering. It was this instinct which made him so zealous a propagandist of anaesthesia, and which led him to oppose what seemed to him to be ruthless and experimental laparotomy before the aseptic method had made the procedure safe. As a lecturer Dr. Bigelow was a past master; not even Holmes surpassed him in graphic and terse expression. His students remembered through their lives the aphorisms of surgical truths which they heard; and they heard little that was valueless. Bigelow was a dramatic *metteur en scene* in his public operations and class demonstrations. He was a perfect operative surgeon, with mind, purpose and hand in absolute accord. If he was regarded as spectacular and seeking the applause of the galleries, it was probably intentional, so that the galleries might not forget. It was said that Dr. Bigelow prized the admiration of his classes. This may have been true. Dr. Holmes once said of himself that praise to his ears was like oats to a horse, but Dr. Bigelow, if he had not enjoyed that tribute of success, would have been more than human; yet he had too large a mind to be satisfied with student popularity. In his old age he remarked to a young friend, "It is a satisfaction to me that there are few surgeons who have inflicted so little pain in a long professional career."

Another admirable teacher in surgery was the Associate Professor, Dr. David Cheever, who though absolutely different from his elder in the Faculty, was regarded by the listening students as an equally valued lecturer. Dr. Cheever's clinical lectures were models in carefully worded, well chosen, terse sentences, which expressed the facts so clearly that their absolute lack of dramatic presentation was more than overcome.

If Dr. Bigelow brought to the mind of the aspirant in surgery the brilliant traditions of the splendid school, which at the hospitals of Paris in the early part of the last century brought such precision to the art, the teachings of Cheever emphasized the sterling qualities of common-sense and the sound judgment of the corresponding English school.

If to the student of the medical schools of today it seems impossible to suppose that any teaching of value could be given in lectures to a large class, the fact of the lasting value of the surgical instruction of the Harvard Medical School of that time will be of much interest. The success was due to the careful and laborious preparation on the part of the lecturer, who trained himself to the clear presentation of carefully chosen, fundamental facts, from which added knowledge and increasing experience could quarry the structure of professional ability.

The chair of Medicine was then held by Dr. George Shattuck, former pupil of Louis and Trousseau. He had made in his earlier days important investigations on typhus fever. He was eminently a medical scholar, and gave to the class the tradition of the remarkable French school, which may be said to have created modern clinical medicine; nor did he forget references to the important early teachings of Sydenham and Boerhaave. Though Dr. Shattuck was not engaged in active practice, yet he carried with him the interests of the medical art and science in all his views of life. His father had been a prominent Boston physician and he, himself, brought up both his two sons to distinguished service in medicine. His grandson now carries on the family tradition. This illustrates an interesting feature of the Boston medical profession; the title of Doctor of Medicine, as though it were hereditary, is continued in one family. If this gives conservatism to the profession, it gives also a dignity and social prominence not always accorded to the doctor, and a sound tradition of rectitude and character as well. It is a notable fact that Dr. Shattuck senior distinguished himself as a student under Louis in investigations regarding typhus; and that his grandson was actively engaged in the study of typhus in Serbia and Poland during and since the great war, thus continuing the valuable family service in medicine.

Another eminent professor, not connected with the Faculty except as an associate giving clinical instruction, was a most esteemed physician, Dr. Henry Ingersoll Bowditch. He was widely known as an authority on consumption (as pulmonary tuberculosis was then called), as the introducer of thoracentesis, and as active in the establishment of a State Board for Public Health. He was a pupil of Louis, and a most high-minded and devoted physician imbued with a full sense of the high calling of the medical man. He once said to a young medical student, doubtful of the worth of medical practice, that the doctor was God's vice-gerent on earth. This belief he exemplified by a long life of widely known medical usefulness. To have known him was to have received an inspiration in the calling of medicine. It is noteworthy, as with Dr. Shattuck, that a grandson still continues the family tradition of medical practice. His nephew is remembered as the first professor of physiology at the Harvard Medical School, filling an endowed chair, a full-time professor with the first well-equipped laboratory connected with any American medical school. The latter was an excellent teacher, well trained in Leipzig under the famous Ludwig.

Another unusual physician deserves to be mentioned and remembered. Dr. Edward Clark gave remarkable lectures on the subject of Therapeutics which consisted of a series of one-hour talks on the physiological and therapeutic value of a number of selected drugs. Professor Clark had the gift of speech to a remarkable degree. He could be ranked as an orator in his ability to influence his listeners. The lecture room was filled at the early hour of eight by eager students crowding to hear and take notes on wonderfully well chosen words describing the value of the careful use of digitalis, alcohol, opium, chloral (then a new drug), bromide and chlorate of potash, and other commonly used medicaments. Dr. Clark was a man of calm and earnest appearance, with a manner which inspired confidence, making him a generally accepted consultant. He lectured dressed in a black broadcloth suit, the coat being cut, as was common among a few of the older physicians, in the fashion now only used for evening dress. Dr. Clark's lectures were considered to be of the highest value. They were charged, as a colleague derisively said, with the belief that the doctor could drive out five inches of disease by five grains of a drug. The facts were taken from text-books and convincingly presented in a scholarly fashion.

These lectures were supplemented by class-room recitation with comments by the assistant professor, Dr. Robert Edes, who taught the physiological action of many pharmaceutical preparations. Dr. Edes was a careful observer and thoughtful practitioner.

The opportunities for teaching obstetrics and gynaecology were meager. Instruction was given by lectures with a manikin by Professors Buckingham and Reynolds, both experienced practitioners. There were lecturers on Chemistry by Dr. Bacon, but they were not regarded as of value. Physiology was taught in small classes by what would now be called seminars, delightfully conducted by Dr. Holmes, using Dalton's Physiology as a text-book. There was also a series of lectures given by Professor Lusk of New York; and later, as has been mentioned, a well equipped physiological laboratory, and a full-time professorship, filled by Dr. Henry P. Bowditch, was established. The students were not obliged to attend any of the lectures. They took out such courses as they chose; and two years' attendance was considered sufficient for the training of a young doctor.

The plan of the Medical School was mainly that made by the older physicians whose early foreign education was in the French school, under the teaching of Louis and Trousseau. At the time here mentioned, the school's instruction was strengthened by the teaching of a few men trained in Germany. The most active of these was Dr. Calvin Ellis, who introduced the method of differential diagnosis or the recognition of the disease in a given case by a systematic consideration of all possible diseases with similar symptoms, and the exclusion of the least probable. Patients were brought into the amphitheater, a student read a written record of the case, presented his diagnosis, and was subjected to the criticism of the class and the Professor These "clinical conferences," as they were called, were well conducted, but a comparatively small number of the class took part as active participants.

Dr. J. C. White, who later became a distinguished professor in dermatology, gave laboratory instruction in urinary analysis and toxicology. Laboratory instruction in pathological histology and the cellular pathology of Virchow was given by a young physician, recently returned from Germany where he devoted special attention to the admirable instruction in Pathology given in Berlin. Dr. R. H. Fitz, later, as is well known, became renowned by his work on the pathology of the appendix which made appendicitis one of the most curable of fatal diseases. This achievement was the result of painstaking pathological observation for many years, leading to logical conclusions based upon clear-sighted analysis.

Another young man, fresh from German study, should be mentioned. He continued the tradition of three generations of surgeons. Dr. J. Collins Warren was a worthy descendant of his forebears.

Dr. W. L. Richardson, trained in German clinics, began as an instructor in obstetrics and gynaecology his valuable and long career of usefulness.

Some instruction was given in the specialties, the Eye, the Ear, and the Throat, and in Auscultation and Percussion by Doctors Williams, Greene, Blake, and Knight.

From the foregoing it is clear that medical education in Boston at the time referred to had progressed far beyond the pure apprentice system necessary in the early pioneer days; and also from the secondary period when medical apprenticeship was supplemented by winter lectures with the teaching of gross anatomy often made possible by body-snatching. The products of the earlier days of medical apprenticeship were at their best a small group of remarkable medical men whose teaching and example have given to American medicine a priceless tradition. The Boston contributions to this group were many, and of those who were active in founding the Harvard Medical School may be mentioned Waterhouse, Warren, Dexter, Boylston and Hersey. Even subsequent professors, although empowered to grant diplomas, valued highly the practical experience given by the student following his preceptor. This term was applied to the medical practitioner who was willing to employ a student for a time as an assistant and to direct his reading. It would be certainly erroneous to decry the benefits of this system of medical education. Many unusual doctors were educated in this expanded apprentice system. As an excellent example of this, Dr. Morrill Wyman may be mentioned.

No better type of physician could have been found than this clear-thinking, close observing, sound-reasoning man who, as his autobiographical record* shows, obtained his chief medical training as an assistant to his father and as a student in the office of a leading practitioner, Dr. W. J. Walker of Charlestown. Young Wyman also attended two courses of lectures, but his chief training was derived from the notes of cases seen by him as assistant to a physician of sound judgment and wide experience. Dr. Morrill Wyman was of great service in several fields of medical usefulness. Perhaps his most noted contribution was in the performance of tapping the thorax in pleuritic effusions. In this he was associated with Dr. Henry I. Bowditch. This procedure, which today is commonplace, attracted much attention at the time of its introduction. The cavities of the body. in the days before antiseptic surgery, were considered beyond surgical interference. He was thought to be a bold man who ventured to violate this belief. Dr. Morrill Wyman may be regarded as the last representative of the group of American physicians trained under the American apprentice system. With such a product as Dr. Wyman, this system cannot be entirely condemned.

It might be supposed that with lax requirements in examinations for admission and for granting the doctor's degree, the quality of the medical students would be low. In fact, however, they were, as a rule, a sober-minded, well-behaved group. There was a small group of college-educated men of excellent mental quality.

At that time, any one who wished could practice medicine without the sanction of a license or degree. The public demanded the liberty of choice in obtaining medical advice. It may be recalled that the late Professor William James, a man of unusual intelligence and with some pretense to medical knowledge, appeared before the Massachusetts Legislature at a hearing, in the late nineties, to protest against a law obliging physicians to obtain a license or diploma as a requisite for permission to practice medicine legally. One of the results of this freedom, which enabled the charlatan to delude the public, was that it stimulated honest men to obtain better knowledge and become willing students.

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* See the book, privately printed in 1913, entitled: "A Brief Record of the Lives and Writings of Dr. Rufus Wyman and his son, Dr. Morrill Wyman," by Morrill Wyman, Jr.

As the students were somewhat closely in touch with the instructors, some knowledge was obtained of the personality of each student, and the diploma-granting professors were able to form a fair estimate of the student's ability to become a safe country doctor, if not through knowledge, at least through personal character. At the same time the professors were able to select promising students to be given special opportunity in the hospital wards and as prosectors and assistants. Such students fed the upper ranks of the profession.

The Autocrat of the Breakfast Table remarked that the legal profession attracted young men of higher intellectual ability than did the medical profession. There was some reason to believe that this might have been true in the community with which Dr. Holmes was acquainted. The practice of medicine in New England, at the time mentioned, was suffering from a condition of doubt, or what may be termed medical agnosticism. This can be seen in Holmes' brilliant essay, "Currents and Counter-Currents in Medicine." It might be thought that the whole pharmacopoeia, except for five drugs, should be thrown into the sea for the benefit of humanity, though to the detriment of fishes, as Dr. Holmes wittily remarked. It is not strange that the community which revolted from Calvinism should turn from blood-letting, purging and drugs, to a belief in the self-limitation of disease and common-sense advice.

The homeopath, with a remedy for every symptom, was, at that time, a more successful practitioner than the common doctor. If the scholarly physician prescribed drugs, believing them to be useless, he felt himself a humbug With such medical ideas among the professors of a school, naturally many students, in the tedium of dull lectures, felt that the average doctor's life was an unworthy one. There were those, however, who believed that with the development of medical science, the practice of medicine would obtain the position in the community and in the scientific world that it deserved; and when more exact knowledge was possessed by the physician, substantial endowment would be given to medical schools. It was in this belief that a group of ambitious students, after finishing their American medical courses, turned hopefully to study at the German universities. These were regarded, at that time, as the leading centers of medical knowledge.

The lack of material and adequate clinical teaching in American medical schools prevented the student from obtaining sufficient training to fit him thoroughly. Conscientious students, who could afford the time and money, were anxious for European study, not only to obtain some acquaintance with medical science, but especially for better training in general medicine, and in the specialties. The trend of the medical pilgrimage, at that period, was toward Vienna, which was generally regarded as the leading medical center of the word, although victorious Berlin claimed scientific preeminence.

An American wit, at the time of the Second Empire, remarked that all good Bostonians dying went to Paris; and it might with truth be said that all ambitious medical students of Boston, on graduation, went to the Kaiserstadt, "gemuetliches Wien." Bismarck called Paris "le cabaret du monde," and Vienna might be termed the great medical round-up. There were many reasons for this. The Imperial and Royal General Hospital in Vienna, established in the previous century for the benefit of the poor peasantry of the whole Austrian Empire, corralled a very large number of individuals of low intelligence, who could be and were utilized, and in some cases, exploited for medical instruction. It appeared as if the Kaiserliches Königliches Allgemeines Krankenhaus existed for the benefit of the doctors. Connected with this great institution were a large number of well instructed young physicians who, as docents and assistants, were able to make use of the enormous clinical material of the hospital for the instruction of small classes of foreign physicians. A few months' attendance at such courses would give to the visitor a wider acquaintance with a great variety of diseases than would be possible in years of private practice in America.

Of the group who had made the Austrian capital famous throughout the world, Oppozer, who developed the method of teaching diagnosis by exclusion, had died; but there remained still active in the Faculty, Hyrtl, the famous anatomist; Rokitansky, the Austrian Cruveilhier, a master of gross pathology; Hebra, the great teacher of dermatology; and Arldt, the famed ophthalmologist. To these had been added Brucke, the physiologist; Bamberger, the clinician; Carl Braun and Spaeth in obstetrics; the other Braun in gynaecology, and Zeissl, the syphilologist. The most prominent of the more recent additions to the Viennese Faculty was Billroth, the renowned surgeon, who was interested in studying the connection of bacteria with wound diseases, although his influence in this direction was not comparable with that of Lister. Billroth developed an excellent school of surgery, and trained a group of younger surgeons who later attained to eminence.

Among the older professors, Hyrtl was especially notable. He "looked the part" of the legendary anatomist, as he lectured over the dissected cadaver, clad in a long gown, indicative of industry, if lacking in tidiness. The dissection was clear and clean, definitely illustrative of the subject discussed. His voice was impressive, as was his solemn and almost religious manner, as if he were a high priest of anatomical science, delivering oracular truth. In referring to an anomalous artery which should not be overlooked, he depicted with dramatic force the calamity which would follow, if the operating surgeon should forget this anomaly and in operating incise the artery. Gossip retailed stories of personal pecularities of Hyrtl, who like an English University Don, resided in a quadrangle of the "Allgemeines Krankenhaus" and led a celibate, somewhat monastic existence which greatly favored personal peculiarities. Hyrtl may be regarded one of the last of the great masters of gross anatomy who contributed so much to make surgery possible in the earlier period when accuracy of anatomical knowledge was needed for rapid execution.

If Hyrtl was reminiscent of the monastic schoolmen, Billroth, the professor of surgery, impersonated another and more modern tradition—that of the Wagnerian idea of the typical Teuton superman. Tall, portly, blond, full bearded, he seemed to represent in modern clothes the type of man who on the German operatic stage impersonated Siegfried, Hans Sachs, Tristan. He was a man of quiet presence, without affectations, and sensible rather than spectacular in the operating amphitheater. As compared with the well ordered discipline apparent in the surgical operating room at the Massachusetts General Hospital, and the precision to be seen there, the operations seen in Vienna seemed poorly planned, conducted with the aid of a large number of badly trained, clumsy, confused assistants. It appeared as if an unnecessarily numerous group of energetic men were engaged in holding down an unfortunate human being, often in a struggling stage of chloroform anaesthesia. Billroth's remarks before and after the operation were always clear and definite, indicative of a well trained and well-stored mind. Billroth was also a lover of the arts, particularly of music, in which he was an expert.

Another Viennese medical demigod now facing the twilight of discard, but worthy of lasting renown, was Rokitansky. As a great teacher of gross pathology he was second to none; but to the visiting American student in search of more modern science his name was overlooked, except as father of a distinguished basso at the Imperial Opera House.

One of the most interesting of the professors was Hebra, whose clinics were always entertaining as well as instructive. In appearance he somewhat resembled the conventional German professor, though German only in education. He was a Bohemian and of the Hebrew race. This was apparent in his quick intelligence, which was unlike that of the typical Teuton. His clinics were demonstrations of abundant material illustrative of the whole range of dermatology, including even leprosy. They were made interesting by a constant flow of comment not only on the patient's ailment, but often personal characteristics, and of his own critical opinions on matters and things generally. He entertained a contempt for the purely theoretical, and his experience in developing dermatology had led him to explode many nonsensical traditions of treatment; notably, that of Plica Polonica, a vermin-infected affection of the hair seen among the untidy. He had little belief in the germ causation of skin affections and had definite contempt for the ready writers of brilliant medical papers not supported by careful clinical observations. One expression, which was typical, may be quoted, spoken emphatically in broad Viennese German: *"Diese Mikroscopiker, sie gucken den ganzen Tag in den Mikroscop hinein, und sie wis' gar nichts was sie sehen,"* and ending with an emphatic wave of his arm, *"Der erste bliebt immer der Kliniker."* "Ah, these microscopists. They stare through the microscope all day and they really don't know what they are looking at. The clinician remains ever the leader."

In addition to these widely known professors, were a number of Ausserordentlich professors, as they were called, docents and assistants, who having the opportunity to use the clinical material of the great hospital, gave special courses to small classes of students for which they received whatever fee was demanded for a few weeks' instruction. It was from these that the Americans, as a rule, obtained the instruction which they especially desired. They were allowed to come in close contact with the patients, and as the classes were small, obtained direct personal teaching from the instructor. Many of these men later became professors of wide reputation in Vienna and elsewhere. Of these, the following are recalled: Gussenbauer, Bandl, Neumann, Kaposi, Monti, Wunderlich, Schroeter, Politzer, Nicaladoni, Schenk.

The wealth of clinical opportunities became an embarrassment, and the student desiring to prepare himself for general practice was often induced to fill his day with the most available and popular courses to avoid hours of idleness. This led to a dissipation of effort, and a confusion of knowledge where a definite purpose was desirable. Admirable instruction was given in pediatrics, in medical diagnosis, obstetrics, gross pathology, and the specialties, especially dermatology, syphilology, laryngology.

The most surprising feature was the great hospital itself. This consisted of a number of courtyards, enclosed by a series of plain, two-story, barrack-like buildings which formed the wards and accessory establishments. The courtyards were entered through archways connected with each other, forming a group including several thousands of individuals under one general administration. Many of the patients were able to walk about, and served in drawing water or other light occupations. They were clothed in coarse cotton garments presenting a singular appearance, as if scantily, and not too warmly dressed. The hospital itself could furnish much interest to the student of sociology. Human life in its beginnings could be seen at the crowded lying-in wards; misfortune and physical calamity, in the general wards; and ample evidence of the effect of ill-conducted lives in the well-populated venereal wards. The conclusion of all human endeavor could be found in the department of pathology, which had one peculiar feature. Under a local statute, all dead bodies were placed for a time in vaults so arranged that connected with the hand of each cadaver was a bell cord which would ring a gong if any of the supposed dead had come to life. The experienced attendant at this department sententiously remarked that the gong had never been sounded.

Any student who availed himself of the daily exercises here conducted by Doctor (later Professor) Zuckerkandl would in a few weeks obtain a practical knowledge of gross pathology of inestimable assistance to the general practitioner.

Vienna left a pleasant memory in the mind of those who passed there a year or more of student days in the seventies. There was enough in the local happenings to broaden the imagination from narrow limitations. There was a brilliant World's Fair, "Austellung," with a wonderful art exhibition. There was the meeting of the German and Austrian Emperors, the first official meeting since the Austrian defeat of 1866, and an enormous review in honor of the German Emperor, Wilhelm I. The whole city was illuminated by candle light in every window in honor of the birthday of the much-loved Emperor Franz Josef. The streets of the old city, the Graben, the Hofburg, suggested memories of the days of Maria Theresa, Joseph II, Metternich, and the conqueror, Napoleon. There were curious old public ceremonies, the annual washing of the feet of the poor by the Emperor, and the wonderful court procession on All Saints' Day, when the Court in the old Court carriages was driven to mass at the Cathedral, and then, escorted by the Archer and Hungarian Guard, walked two by two behind the Cardinal through the Viennese streets, offering prayers at the different Stations. There was the wonderful St. Stephen's, whose spire was a structure of surpassing beauty with its old façade which must have inspired many of the Crusaders, and may have looked down upon Richard the Lion Hearted, disguised and attempting to escape his pursuers. There was the wonderful church music each Sunday at the Augustiner Kirche, in the vaults of which reposed many of the haughtiest of the Hapsburgs. There was the Hof Kapelle, free to the Sunday worship of all in the small enclosure where mass was celebrated with superb music and gorgeously clad celebrants, the altar guarded by two soldiers in full uniform who knelt bareheaded at the elevation of the Host, significant of the fact that the Church was above all. The little chapel was galleried, screened from public gaze where the girlish Marie Antoinette may have been taught her prayers at the knees of Maria Theresa, and where the House of Hapsburg may have found consolation for its many calamities. The art treasures alone in Vienna deserve the admiration of all travelers. Good music was universal in Vienna, and the best military music in the world was to be heard from the regimental bands; but, as a Viennese citizen remarked ruefully, "when we go to battle, we are always beaten." The American students in Vienna heartily agreed with the sentiment of the popular local song:

Es gibt nur eine Kaiserstadt,
Es gibt nur eine Wien.

Near the large Hospital at Vienna was a popular restaurant, the Riedhof, which was much frequented by medical students of all nationalities, among these many Americans. A long table was always reserved for them, and there were many regular diners who found themselves at home in this typical Gasthaus. Here the leisure evening hours were frequently passed in discussions on the advantages and disadvantages of different European and especially German medical schools. The diners were able to relate personal experiences as students in the several smaller German universities and at Berlin. Praise and criticism were freely given.

Circumstances had favored the establishment of excellent medical schools in not a few of the provincial German capitals. The different Grand Duchies and Principalities, which made the North German Confederation and later the Empire, focussed their activities each around a petty court, the monarch of which was supposed in return for his feudal power to promote science and art, court physicians, a university and a hospital. Preferment in the different Duchies and Kingdoms came to the different hospital heads through service as university professors attracting court favor and the notice of a minister of education. Laboratory research and medical renown were in this way encouraged. The result of this was that there were several places where most important knowledge could be obtained. At Leipzig, Ludwig had made physiological research preëminent in his laboratory. Pettenkoffer, in Munich, was a leader in Public Hygiene. At Heidelberg, Prague, Breslau, and Wurzburg there were excellent medical schools with opportunities for special research in different branches. At Strassburg, the Imperial German Government had established, and was developing an important University with distinguished medical professorships. Waldeyer, Recklinghausen, Shmiedeburg, Lucke were names to conjure with. But the greatest of all the German universities was undoubtedly at Berlin.

There was much discussion at the Riedhof as to the relative value from the student's point of view of the medical schools at Berlin and Vienna. It was generally agreed that in modern scientific research Berlin was the superior school: "*Theoretisch Berlin ist besser, aber Wien ist immer praktisch,*" was the general verdict. There was unanimity in the opinion that Vienna was the more agreeable capital for the resident. There was agreement among the diners with the statement expressed by the popular head waiter at the restaurant that the Prussians were domineering, rude, and disagreeable folk. "*Aber geh', ich habe Sie nicht gern, die Nord Deutschen. Und hier das Bier ist besser. In Berlin Kaffee ist immer schlecht.*"

The city of Berlin presented at that period a striking contrast to the more cosmopolitan capital of Austria. The architecture of the palace and public buildings was heavy; the streets were ill paved, with foot deep gutters bordering the sidewalks, which were, in turn, as badly paved as the streets. The famed Unter den Linden and the Brandenburg Thor were not impressive either in the gayety of the passers or the character of the bordering buildings. The city seemed like a smaller and gloomier London. One feature, however, gave an imperishable suggestion of the great past history of Berlin—namely, the equestrian statue of the Great Frederick, which eclipsed by its excellent art any memory of the days when the French conqueror dictated terms to the abject Prussian King. The fact that Prussia had regained prominence would be made evident to the visitor if he should see the great Count von Bismarck taking his afternoon ride to the park, heavily mounted, uniformed like a general, and with the proud mien of a super-Prussian. At that time no one would have believed that the Prussian capital would soon be transformed into the bustling great modern city, a German Chicago. The University of Berlin had already become the most important one, not only in Germany, but, in many respects, in all the world, and the medical Faculty was preëminent. Extra-mural teaching had, however, not been developed so fully as at Vienna, and fewer Americans studied medicine there.

The most famous professor of the medical Faculty was the great pathologist, Rudolph Virchow. He was at that time at the height of his fame, and renowned for his study on tumors, and cellular pathology. He had also entered the political arena, and had even ventured to oppose Bismarck, rumor stating that he had gone so far as to challenge that great Junker, who held the political capacity of the medical professor in unqualified contempt. Virchow displayed in his daily demonstrations of gross pathological material to a large class, in addition to his wonderful knowledge and graphic powers as a teacher, much egotism; and this must have seemed unbearable to the domineering Bismarck. Virchow's intolerance of differing opinions, his sneers at the conquered French, interpolated into his lectures, however, could well be ignored by the student, who found in his course one of the most stimulating exercises ever presented to medical minds.

Two unusual professors of medicine were prominent in the Berlin world. Professor Frerich, who had made a name by his work on diseases of the liver, was a clear but not enlivening lecturer. Both he and Traube, also a noted clinician, were masters of the art of diagnosis, not only through well-trained intelligence, but also from their thorough knowledge of pathology. Special private courses utilizing the extensive material of the clinic were open to the student. One of exceptional excellence was given by Ewald, afterwards distinguished for his work on digestion.

To the popular mind perhaps the most notable and renowned member of the Berlin Medical School was one who today is almost forgotten. As the chief medical officer in the Prussian Army during the Franco-Prussian War, as the author of a great work on surgery, and the editor-in-chief of the most comprehensive of the current medical archives, Naron von Langenbeck enjoyed a well-earned fame. In ap~~pearance he~~ was in marked contrast to the younger Billroth.

Although the University of Berlin had for a long time been recognized as foremost in many of its departments (and in Virchow the medical Faculty held the leading pathologists of the time as an original thinker and stimulating teacher), yet fewer Americans pursued their post-graduate studies there than in Vienna, unless they planned to devote especial attention to pathology. The extra-mural courses were not then arranged so as to occupy all the time of the student, and the energetic foreigners, with but limited time at their disposal, were restless in idle hours. A few admirable courses in clinical medicine could be obtained, and it was evident that some of the medical instruction at Berlin was of the highest excellence. As in Vienna, the surgery of the time was not preëminent as compared with French, English, or the best American standards.

A few Americans matriculated in some of the smaller German universities (Wurzburg, Heidelberg, Breslau) with or without previous medical study, and took German medical degrees. From the reports obtained from these students it was inferred that the medical course, even in the minor medical States, was more thorough at that time than in any of the medical schools in the United States, and in some the opportunities for study and research were undoubtedly superior to those offered elsewhere.

No one can review the condition of medical education and medical research in Germany at that period without an expression of great admiration. It seems as if the German mind, freed from the limitations of feudalistic control, and gaining imperial consciousness, realized its vigor and aspired to dominate the thought of the whole medical world. In this purpose was organized a system of patient, thorough work which developed the idea of the cellular pathology to its utmost limit. This theory, though erroneous in its conception of the etiology of disease, served as the scaffolding with which was built a structure of lasting value in medical science.

The German mind is thorough, but it lacks breadth and soundness in broad generalizations. It remained for the genius of France, then thought to be crushed and forever humiliated, to give to the world the enlightened idea which revivified the science of medicine. Formerly the work of Bichat had created modern medical science. The discoveries of Pasteur brought incalculable help to afflicted humanity.

It was a great pleasure to the medical traveler to turn his steps from Germany to France and its wonderful capital, Paris. However much Napoleon III had injured his country politically, socially, and its scientific organization, the remarkable historical tradition and wonderful achievement of this great people was impressive even at the time of national disaster when the column in the Place Vendome and the Palace of the Tuileries were in ruins, the statue of Strasburg, the provincial capital, recently taken by the Germans, was covered with the emblems of mourning, and the city not yet fully recovered from the ravages of the Commune. Beneath the surface, the thoughtful observer could find that in medicine, as in literature and art, France was still able to offer great gifts to the world.

Although the importance of the work of the famous French chemist in its relation to surgery was not fully realized by his countrymen, yet his conclusions were utilized in a method of wound treatment successfully used in France, but now forgotten. As germs do not pass through cotton in the mouth of a bottle containing a culture medium, Parisian surgeons made use of cotton wool as a surgical dressing after amputation. The stump was pillowed in a mass of sterilized cotton wool and left untouched for some time, when healing was found to have progressed to a surprising extent. This method, though sensible and useful, is now displaced by the more thorough methods of Listerian antisepticism and later aseptic methods. The great French surgeon, Ollier, was at the time little known to Americans, who were also quite unfamiliar with the excellent current text-books and writings on surgery. The large work on surgery by Folin and Dupleix was a model in style and substance. Some of the smaller hand-books, notably that on Histology by Ranvier, were conspicuous for their precision and clarity; in marked contrast to the more confused and profuse style too often injuring German medical literature.

The custom of the daily, early morning visits, open to all medical men, gave visitors an opportunity to observe a large number of medical and surgical cases in the wards of the famous old Parisian Hotel Dieu and other large hospitals. Foreigners could not fail to be impressed by the thoroughness and scholarship of the professors and heads of Service in charge of the teaching positions, utilizing an enormous amount and great variety of clinical material. It was an inspiration to visit the Musée Orfila and the world-renowned École de Médecine.

The great work of Charcot, who may be said to have created Neurology, was not then generally known to the young American medical traveler; nor was the excellence of the intelligent medical and surgical practice of a number of physicians and surgeons, then well known, but now forgotten, such as Ball, Bouvier, Vincent, Gosselan, Péan, Brown-Séquard, Bouchut, Ricord, Guyon, Civiale, and many others justly appreciated by the visitor.

An admirable private course on operative surgery given to two Americans by Peyrot, then a young and as yet little-known surgeon, gave to his pupils a sense of regret that more time had not been given to graduate medical study in Paris. An American who passed a few weeks at the medical school in Lyons brought testimony to the excellence of medical teaching in one of the provincial French medical schools.

It is always a pleasure for an American after a prolonged stay on the Continent, to visit England. This is in part due to the common language, but also to the charm of the scenery, the hedgerows, the greensward, and the homes of the "Mother Country," as it is still regarded by many Americans. This is particularly true of the physician, as medical education in the United States was largely based on British traditions.

It is surprising now to recall the scant cordiality given to many visiting Americans by the average Englishman of the street. in the decade following the American Civil War. Perhaps this was due to the fact that many Englishmen were disappointed that the side they had favored had lost. An agreeable young American physician who secured lodgings in Bloomsbury, London, was told by the landlady that she was willing to receive American lodgers, in fact she liked them, but that her friends thought it was strange that she was willing to receive them.

But if the American at that time felt himself, when in England, among condescending strangers, he never was entirely an alien. The greater part of the text-books he had studied in America were written by English physicians. Almost all the traditions of American teaching were founded upon the writings of great British medical teachers,—Sydenham, Hunter, Cullen, Brodie, Bright, Cooper, and scores of other famous men. It was as if the medical visitor was returning to the original sources of medical thought, when he found himself walking in the enclosure of Guy's and St. Bartholomew's, or visiting the Hunterian Museum. More than this, he was more in sympathy with the English than with the German point of view of medical practice. The patient was an individual with rights, and not merely an object for study. As a rule, the personality of the heads of hospital services in London at the morning visits was that of reassuring practical efficiency, more attractive to an American than the type not uncommonly met in many of the German hospitals of the period. The tradition of medicine in England was a powerful one, which lifted and elevated the character of the medical man and the surgeon, even though socially the profession did not in England receive the recognition its responsibilities and devotion merited. It was difficult for a visitor to determine the worth of several London medical schools. They were better than the best in the United States in possessing better clinical opportunities, and in many instances the faculties seemed to be well manned. What seemed to a visitor the best clinical instruction to be found anywhere, not even excepting Vienna and Berlin, was given daily by Murchison to his clinical clerks on his morning hospital rounds at St. Thomas' Hospital.

At present it seems surprising that there should have been any question of the value of the great work of Lister in Edinburgh, but it was, in fact, many years before the London people even attempted to regard it as worthy of serious consideration. In a parallel service under an older surgeon in the Royal Infirmary at Edinburgh, antiseptics were decried as useless, and "laudable pus" was regarded as the only concomitant of healthy wound healing. This is partly to be explained by the instinctive conservatism of most professional men past middle life. "In their experience" the new methods were unnecessary. They had formed general impressions based upon the recollection of fortunate results, and had explained their failures as due to exceptional circumstances to be disregarded in the generalization. It was also true that there was in the antiseptic method, as first presented, an unnecessary, cumbersome detail, which deterred the skeptical. Every fair-minded man who took the pains to visit wards and hear the careful explanation of the detailed treatment of wounds by Watson Cheyne could not help recognizing that a new era had opened in surgery.

At the time Paget was active as a teacher and writer, Sir Henry Thompson was employing lithotrity extensively in separate sittings; and Ferguson was still lecturing in Surgery, impersonating by his presence the fine old type of British surgeon. There was in London, then, little said of a Scotch surgeon who, in Edinburgh, had introduced into his ward a new method of surgical dressing. Lister himself carried conviction by his manner and appearance of sincerity and earnestness as well as by a clear statement of surprising facts in wound healing. He did not appear to have entirely completed his work, and his dressings were cumbersome. It seems strange now to recall the fact that he operated clothed in a discarded black broadcloth coat with its front much stained with the blood of former operations. His hands were not thoroughly antisepticized, but were dipped in a solution of carbolic. The cuffs of his old coat were turned up, baring the wrist, and there was no other provision to protect from germ-carrying clothing. At the time, Lister's purpose was to protect the wound from air-borne germs.

Reviewing in retrospect English medical teaching of the period, excellences appear now which were not then noted by the less mature judgment of the young American medical travelers. Medical education in Great Britain was developed not so much at the universities as in the teaching of pupils by the masters of the craft of medicine and surgery. Licenses to practice were granted by what may be considered as guilds without degrees or state examinations. The student was kept closely to practical training with little attention paid to superfluities. The clinical clerkships and dresserships at hospitals, each with a medical school attached, seemed to prepare the student more quickly for the practice of medicine than was possible in the more academic methods of the Continental universities. It was perhaps the practical method of teaching which gave to British medicine and surgery characteristics of sound common sense in the treatment of individual patients.

The Americans returning home from their foreign medical studies realized the value of the knowledge they had obtained. They recognized also some defects in foreign medical teaching which should be avoided in the ideal educational system which they hoped to see established in the United States. They were able to bring the promise of a new era in surgery, of great developments in pathology, of far-reaching discoveries in bacteriology, and of increased precision in special medical knowledge.

Three of this group of searchers for wisdom in foreign lands deserve special mention for their later achievements as medical educators: William Osler, the brilliant writer and teacher; Frederick Shattuck, a stimulating clinical teacher and most human of practitioners; William Bull, the first in America to make general surgery a specialty,—sound in judgment, skilled in hand, beloved by his pupils. These three reënforced their natural ability by foreign study and helped to raise medical education in America to a high position.

Several of the young physicians who had passed two years in foreign study returned to Boston without definite plans for establishing in practice. They had acquired a good theoretical knowledge of medicine and an ability to recognize almost all diseases, even the rarer forms, and a working knowledge of the pathological processes manifested in various disease conditions. They were good observers of symptoms and had a superficial knowledge of a few specialties which might come under the cognizance of a general practitioner. Their critical training had been excellent, and their opinion on the relative ability of the great leaders in medical thought was of some value. They had, however, become somewhat estranged from the practical side of medical treatment, and needed considerable experience. It can, however, be said that they were well qualified as critics in medical education, and many of them, in years while waiting for practice, devoted much time to hospital and dispensary work as assistants.

They found that many changes had taken place in the Harvard Medical School during their absence, and more were planned by the energetic young President of Harvard University. These changes, however, had not been made without much opposition from the older members of the Faculty, though they were warmly supported by the younger professors and by those familiar with the contemporaneous medical teaching in Germany. To examine all the important reforms brought about by the energetic efforts and far-seeing intelligence of this remarkable educator would demand a fuller consideration of the subject than is here planned. It would be an undertaking of difficulty to relate the obstacles encountered and overcome by President Eliot in placing the Harvard Medical School on a proper basis as an influential force in medical education.

It can be said that President Eliot had a great advantage over his critics, in the fact that he was an educator of experience who could look at the problem of the medical needs of the community more largely than was possible for many medical men, whose range of consideration was somewhat fogged by the faulty traditions of medicine in the past. Most physicians regarded the profession of medicine as one of the learned professions, and it could be so regarded if the record of systematized and transmitted thoughts on medical subjects form the best basis for training the physician. But as a matter of fact, the medicine of that period was in no true sense a science. If the human organism could be taken apart like a piece of machinery or its chemical energies tested, medicine would be as technical as engineering; and if medicine were to advance, it would, in the belief of the young university President, be through the advance of certain basic sciences and in the adoption of the improved and more precise methods. Medical education should consist not only in lectures from experienced physicians, but also in teaching the young medical man to observe, and to reason logically from facts ascertained through trained observation in medical science, as well as in medical lore.

The critics of President Eliot's theories argued that even if such a change in the system of medical education were necessary, it should not be attempted in the United States. The need in a new and largely agricultural country of magnificent distances was for doctors suited to country practice and not over-educated scientists ill fitted to meet the needs of country people. Until the community demanded better medical education, and would support more highly educated physicians, and would endow chairs in medical schools as they gave freely for foreign missions, it was a waste of effort to try to develop medical sciences in American medical schools. The public in the United States got what it wanted, and it did not want scientific doctors; rather it desired practical physicians. Beyond a few truths, education in medicine must be based on the teachings of experience, learned in the hard school of practice. There could be little precise knowledge in medicine, and common sense must guide the doctor rather than an imperfect science which could only confuse. It was further argued that a layman like President Eliot could not comprehend the true needs in medical education as a practicing physician could, and would be more likely to mislead public opinion than to guide it safely.

President Eliot, however, did not limit his proposed reform to an increase in the teaching of fundamental sciences. He urged also an even more radical departure from the methods of medical education existing not only in America, but also in Europe, where considerable laxity prevailed in the attendance of medical students, and in the order in which they took up their different courses. The university in Europe gave much freedom to the student; he might study or not what he liked or when he liked. He was required to pay his matriculation fee, and pass, when he liked, the required examinations meeting the regulations prescribed for a degree.

It was President Eliot's idea that no chances should be taken in the instruction of the young doctor. The physician's ignorance must not be a menace to his fellows, and if he claimed the confidence of the community on the strength of a Harvard diploma, it should mean that instruction had been given and received which justified his claim for trust. The courses should be graded, the professors should not give lectures repeated each year and unrefreshed by the stimulus of fresh knowledge; the student should not attend higher courses until prepared by adequate knowledge to comprehend and profit by them. The professors should be interested primarily in teaching and in research in their respective subjects, and not practitioners attempting to instruct without any special knowledge of the subject they professed to know.

President Eliot's plan involved the reorganization of the teaching force of a medical school, the replacement of the unprogressives by earnest workers well trained in their special branches, introducing thoroughness where there had been laxity in methods, raising funds for laboratories and adequate salaries for full-time workers in the fundamental sciences, and providing better clinical facilities and proper teachers for clinical courses. For all this, the money-giving community, as well as the medical profession, had to be educated. Both were doubtful of the advantage of radical changes in medical instruction.

The fact that the Harvard Medical School and other schools throughout the country have adopted President Eliot's ideas, during his lifetime, is a proof of his remarkably far-seeing wisdom. The layman saw more clearly than the professional the need of better methods to make the profession of medicine what it should be and what it ultimately became. Dr. Eliot had confidence, and was justified in that confidence, that the American would give largely to advance the profession, as soon as he was convinced that not only its purpose was good, but also that its methods were sound.

If the history of education in the United States is ever written, the accomplishments of President Eliot will be among the foremost of successful achievements. It is an evidence of his thoughtful consideration of the needed reforms, that in the different departments different methods were recommended. In the Law School, the case system was adopted in the place of the lecture system. In the Divinity School larger instruction in theology replaced denominational teaching. In the College of Liberal Arts, broad eclecticism was advocated to give amplitude and wealth to scholarship; but in medicine, which dealt with life and death, greater precision and thorough exactitude were prescribed.

Twenty years later, President Eliot was able to see the adoption of many of his ideas on medical education in the opening of the medical department of Johns Hopkins University, which graduated its first class in 1897. Under the direction of a remarkably brilliant group of physicians of which Professor Osler was a leader, the Johns Hopkins Medical School became a leading influence in medical education in America. The changes urged by President Eliot and the example of the Johns Hopkins Medical School and Hospital led to improvements and enlargements of medical schools with grants and endowments for teaching and research in many of our large cities. The work has been munificently supported by the Carnegie Foundation and the General Education Board. In equipment and organization, medical education in the United States cannot now complain of a lack of support or of meager opportunities.

Interest in the reform of medical education was not limited to the efforts in a few medical centers, but became general. This culminated in the remarkable achievements brought about by the American Medical Association. In 1901 the Journal of this Association began a classification of American medical schools and a Council of Medical Education was established. (See the *Journal of the American Medical Association,* Vol. 81, No. 7, page 579.) The success of the movement of reform since then has been much more rapid than was anticipated, thanks to the general support which it received throughout the profession.

Physicians, the practice of medicine, and medical education have been constantly criticized from the time of Aristophanes to that of Abram Flexner; and no doubt there is justice in much of the criticism. Perhaps a part of the blame can be laid at the door of the lay public rather than the medical man, who receives scant justice from the community in which he practices, being often unduly praised and as often unduly blamed. The ignorance of the otherwise intelligent public on matters of health has always been appalling. Men of marked intelligence and mental acumen will often entrust their lives to faddists and plausible charlatans. The sick man wants a miracle to be worked in his special case; and the tradition of the miracle-working proficient endowed with unusual power still lingers.

There is also the obstruction presented by the public to the proper pursuit of medical knowledge. Dissection of a human body, post-mortem examinations, and animal experimentation have always been opposed by the sentimentalists. Under these circumstances, it may be thought commendable that the medical man is so often correct in his opinion.

Voltaire has said that the practice of medicine consisted in putting a drug of which the doctor knew little into the body of which he knew less. But medical knowledge has advanced so much in the last century that the remark of the French satirist is only of historical interest. The present criticism of medical education differs from that of the past. The complaint is now not of meagerness, but of superfluity, particularly in specialized teaching. This criticism finds its counterpart in much that is said of the higher education generally in the United States. In this connection the testimony of Mr. Zimmern deserves careful consideration. As a Professor in a leading American university, after experience as an educator at Oxford, his opinion is of value. (See the Educational Number of the New York *Evening Post,* Saturday, August 25, 1923.) Although his remarks do not refer to teaching in medical departments, yet they may be thought applicable to all the branches of our universities. "There is a prevalence," says Professor Zimmern, "in American universities of intellectual specialization of an extreme and ultra-German type. For the minute and special studies carried on by young scholars in German and other Continental universities under the direction of great masters like a Mommsen and a Harnack there is something to be said. But the transplantation of this method from German to American soil, and the attempt to supply to the energetic, independent-minded American a system that succeeded, alas, only too well, with the industrious, obedient German, has been an unmixed calamity."

The defects in medical education are more unfortunate than in other branches of higher education. Superficiality in medical training may bring calamity. If a sufficient number of energetic, broad-thinking physicians, socially in close touch with their fellows, are not graduated, the health of the towns, cities, and villages will suffer.

The quality of our medical students is today excellent. It is not true as formerly, when Dr. Holmes wrote that the brightest minds among the young men turned to the study of the law rather than to medicine. If the next generation in the United States does not produce a remarkable number of great physicians, it will be because our medical schools do not furnish the proper stimulus and the suitable training.

Several defects in our medical schools have been noticed by leading educators, as well as prominent physicians. The following may be mentioned: Medical education today is in danger of becoming too highly standardized, too rigid in its administration, and without sufficient elasticity in its admission requirements and instruction; medical educators are not sufficiently informed in the newer methods—they adhere too much to the examination mark system and too little to the development of the personality needed by the physician; often the instructing force in medical schools is more interested in promoting research than in perfecting medical pedagogics; the cost of medical education is excessive; there is a waste of the students' time in long vacations; hospital internships, a necessary part of medical education, are sometimes organized more for the interest of hospital administration than for the best training of the young physician. Formerly medical schools were held by and conducted in the interest of imperfectly educated practicing doctors; today some medical schools are administered by specialists unable to offer broadly planned instruction. The different functions of a modern medical school are not sufficiently separated. A medical university should be both a research institute and a medical school; but the ability in conducting one is not always the ability needed in the other educational effort. The work of research should be distinct in administration from the teaching of young medical practitioners. At present too many medical students leave school over-examined and undertaught. Their minds are surfeited by the narrow instruction of a number of specialists. They have a confused picture of the field of medicine in which their work is to lie. As a result there is an excess of specialism, and a scarcity of soundly educated general practitioners,

A modern educator might find much to criticize from the teacher's viewpoint in medical education today, as was the case fifty years ago. It should, however, be remembered that the science of medicine has grown with great rapidity in a short time. There has been a great change in the conception of disease. Fifty years ago the public mind had not progressed far from the idea that the sick man was possessed of something evil which must be driven out. Blood-letting, emetics and purging were the successors of the exorcism of evil spirits possessing the body of the sick. Today medicine may be considered as a branch of biological science requiring scientific instruction, and a zeal for investigation inspires both the student and the instructor. It is more interesting to learn the facts of the pineal gland than how to instruct an anxious mother!

There is no danger that the practice of medicine in America will become so dehumanized as to merit the satire of Molière. The pursuit of scientific research will never be conducted at the cost of human life or suffering. But the modern professor of Internal Medicine at a large medical school and the head of an active, teaching, clinical hospital service is not trained to consider or to teach the personal equation of each patient as carefully as was the practicing Professor of Theory and Practice fifty years ago. It is doubtless of the greatest value to note and make deductions from the phenomena in a thousand hospital cases of a given disease.

It is also important to know how the resistance of a certain individual will react under a given morbid condition. Much importance was given fifty years ago to the latter training. The practitioner developed keen powers of observation.

The rapid change in our medical schools might be expected to cause a revolutionary abandonment of older traditions. Many of the methods found useful in a medical school fifty years ago would be impracticable today from the absence of existing teaching ability. Although this loss is much more than made good by greater gains in other directions, yet it would undoubtedly be advisable to examine what was advantageous in former instruction. If a modern physician should hear a lecture by Jacob Bigelow, John Ware, James Jackson, or Edward Clark, he might regard it as conspicuous for its lack of precise knowledge. But would such criticism be altogether just? Medical schools and educational methods which trained men like Morrill Wyman and Austin Flint should not be hastily condemned. They fitted the doctor well for the needs of the country practice of that day.

Formerly the honest physician admitted his inability to cure disease and devoted his attention to nursing the strength of his patient and to relieving symptons. Today the patient is in danger of unnecessary treatment. The specialist, acquainted with the worst cases and less familiar with the minor phases cured by the natural self-limitation in healthy individuals, may be led to over-treat what will correct itself if let alone. Sometimes preventive treatment is adopted when the danger is remote in individuals of healthy constitutions. A devoted attention to the symptoms in the individual case was an important aim of medical practice fifty years ago. It is even more important today.

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REQUIREMENTS FOR AN IDEAL CARDIAC CLINIC AND A SYSTEM OF NOMENCLATURE

BY THE COMMITTEE ON CARDIAC CLINICS

Of the New York Association for the Prevention and Relief of Heart Disease

I. MEDICAL ORGANIZATION

Ward Service: Initial Study, Investigation, Relief.

A. 1.—It is desirable that there be a ward service in connection with every cardiac clinic. Independent dispensaries should have close affiliation with some hospital, with interlocking staffs.

2.—It is desirable that the hospital wards be available for an initial study of each case admitted to the cardiac clinic, for such other investigation as is indicated, and for the treatment of those patients unable or too ill to receive the proper care at home.

3.—The cardiac clinic should function as a return clinic for cardiac cases treated in the wards.

[Note: The standards below presuppose that there is a ward service in direct connection with the clinics.]

Unified Service.

B.—The hospital and out-patient staff should constitute one organization. The cardiac clinic should operate as a special section of the general medical clinic, to which it should offer aid in diagnosis and treatment. Some member of the staff of the cardiac clinic should have ward duties, and all members ward privileges. The entire staff should be encouraged to follow its cases admitted to the wards.

Responsibility for Patients.

C.—When a patient is enrolled in more than one special clinic (cardiac, syphilitic, etc.) the responsibility for his proper care must be placed upon one of these clinics. This may be determined by choosing the clinic which provides care for the most urgent need.

Attendance of Staff.

D. 1.—The staff should be assigned definite hours for attendance in the cardiac clinic.

2.—A record of attendance should be kept and analyzed periodically. No physician should hold an appointment whose record of attendance is not satisfactory.

Chief of Clinics.

E. 1.—The chief of clinic should be of rank corresponding at least to that of an assistant attending physician to the hospital. He should be an internist or pediatrician with a broad clinical training and a special knowledge of the cardiac problems. He should be a physician of such experience with patients having heart disease as to meet the approval of the executive committee of the Association. He should be responsible for maintaining the medical standards and should be in personal charge of the clinic work. He should assign the staff to cover the various sessions of the clinic. He should supervise diagnosis and treatment advised or instituted by juniors.

2.—The chief of clinic should be present during the entire clinic hours of the day when he is on duty.

3.—In large clinics some of the duties of the chief of clinic may be delegated to other members of the staff.

Interns.

F. 1.—The interns on service in the wards should be definitely assigned to regular duties in the cardiac clinic.

2.—If necessary to make out-patient as well as in-patient service possible, the number of interns on duty should be increased.

Professional and Lay Assistance.

G. 1.—The medical staff should be relieved as far as possible of all duties not directly concerned with the diagnosis and treatment of patients.

2.—Trained assistants for performing the executive, social service, nursing, clerical and technical functions should be provided.

Staff Conferences.

H.—Staff conferences, either of the cardiac clinic staff or of the entire medical staff, should be held at least once each month for the discussion of both ward and dispensary cases.

All members of the cardiac clinic should be required to attend the conferences.

II. SOCIAL SERVICE

N. B.: The Social Service Section of the Associated Out-Patient Clinics has formulated general standards of organization and function of social service in clinics. Only certain special points are, therefore, included here.

Medical Social Worker.

A. 1.—The social service worker should be the clinic executive, and it should be her responsibility to see that all measures concerned with the management of the patients are properly carried out.

2.—It has been found that one full-time worker cannot care properly for more than 100 active patients. She should be provided with sufficient professional, clerical and lay assistants.

Attendance at Staff Conference.

B.—The medical social worker should be invited to attend the staff conferences.

Privacy for Social Interviews.

C.—There should be provision for privacy for social service workers' interviews with patients.

III. SPACE, EQUIPMENT AND FACILITIES

Rooms.

A.—There should be adequate room for waiting, examination, and for teaching purposes, where teaching is done.

Laboratory and X-Ray Facilities.

B. 1.—The service of modern x-ray plant should be available.

2.—It is desirable that the services of an elec-

3.—There should be proper clinical laboratory facilities.

Equipment.

C.—Equipment should consist of:

1. Proper ventilation, plumbing and light.
2. Walls and floors easily washed.
3. Drinking water with paper cups.
4. Desk and chairs.
5. Scales.
6. Examining table and draping sheets.
7. Lights for nose, ear, throat and head work, tongue depressors, and thermometers.
8. "Reference blanks" for patients referred to other departments of the institution or to other institutions.
9. One sphygmomanometer in each examining room.
10. One ophthalmoscope.
11. One spirometer.
12. Suitable apparatus for exercise tests.
13. Small fluoroscopic unit.

IV. RECORDS

A.—Records of the history, physical examination, laboratory investigation, treatment, and follow-up notes, including social service activities, should be kept in a manner meeting the approval of the Association.

B.—They should be filed in such a way as to be readily accessible.

V. ADMISSION AND DISTRIBUTION OF PATIENTS

Districting.

A.—To facilitate social service work it is advisable, so far as possible, to limit the use of the clinic to patients residing within a specified district.

Limitation of Numbers.

B.—It is advisable that the clinic be limited to such numbers as may receive the best care rather than to dissipate limited facilities upon such large numbers as would make the care inadequate.

Continuous Care.

C.—The patient should be treated by the same physician continually.

Appointment System.

D.—To avoid prolonged waiting and to obviate unnecessary visits, pre-arranged appointments should be made. Patients must be made to understand that they may visit the clinic before the time of the appointment if they feel that it is necessary.

E.—Only patients having potential or organic heart disease should be enrolled in a cardiac clinic, although any patient may be kept under observation until the diagnosis is established.

F.—No patients should be carried on the active list of the clinic if they have not attended within six months.

VI. STANDARDS FOR PHYSICAL EXAMINATION

At First Visit and on Revisits.

A.—Each patient should have a complete physical examination on admission and receive such examination as is necessary on subsequent visits.

Doubtful Cases.

B.—All doubtful or unusual cases should be seen by the chief of clinic or consulting physician.

VII. STANDARDS FOR TREATMENT

Permanent Care.

A. 1.—All cardiac patients should remain permanently under the care of the clinic, even though they may be free from symptoms.

2.—There should be at least one physician for every fifty active patients enrolled in the cardiac clinic.

Instructions to Patients.

B.—The patients should receive written or printed instruction in addition to verbal directions. (Instruction list, diet lists, etc.)

Amount of Medicine.

C.—The amount of medicine dispensed should be sufficient to obviate the return of patients for medicine only.

Convalescent or Country Care.

D.—Close coöperation should be maintained with the agencies providing convalescent and country care.

Consultation Facilities.

E. 1.—There should be facilities for consultation in all required specialties.

2.—Chiefs of clinics are strongly urged to avail themselves of the services of the consultants appointed by the committee on Cardiac Clinics, in order to foster a common viewpoint in all the cardiac clinics throughout the city.

Relation to Public School System.

F.—The clinic should coöperate with the schools, social agencies, day nurseries, etc., by reporting the diagnosis and treatment of referred cases. It is desirable that cases should be referred only from a specified district mutually agreed upon and that, so far as possible, cases should be referred by appointment in such numbers and at such hours as may be of greatest mutual benefit.

Cases for Follow-up.

G.—Convalescent homes and other coöperating agencies which wish to follow up patients should do so only through the cardiac clinics, where their investigators should receive earnest coöperation. Investigation of patients enrolled in cardiac clinics by other agencies than their own social service is considered to be a duplication of effort, a hardship to the family and, therefore, is deemed unwise.

H.—It is recommended that a hospital for chronic cardiac disease be made available to care for patients in need of prolonged hospitalization.

THE MINIMUM REQUIREMENTS FOR CLINIC MEMBERSHIP IN THE COMMITTEE ON CARDIAC CLINICS

I.

MEDICAL ORGANIZATION.

Chief of Clinic.—The chief of clinic should be a physician of sufficient experience with patients having heart disease to meet the approval of the Executive Committee of the Association.

Staff.—There should be at least one physician for every fifty active patients enrolled in the clinic.

Ward Facilities.—There should be at least an affiliation with a ward service where cardiac cases may be admitted.

II.

SOCIAL SERVICE.

There should be at least one social service worker connected with the clinic.

III.

SPACE EQUIPMENT AND FACILITIES.

1. There should be at least one waiting room and separate rooms or cubicles for the examination of men and women patients in adult clinics.
2. There should be an examining table in each room, at least one pair of scales, and a sphygmomanometer in the clinic.

IV.

RECORDS.

Records of patients, history, physical examination, treatment and follow-up notes, including social service activities, should be kept in a manner meeting the approval of the Committee.

These should be filed in such a way as to be of easy access.

V.

ADMISSION AND DISTRIBUTION OF PATIENTS.

Only patients having potential or organic heart disease should be enrolled.

No patient should be carried on the active list of a clinic who has not reported in six months.

VI.

STANDARDS FOR PHYSICAL EXAMINATION.

A.—Each patient should have a complete physical examination on admission, and receive such examination as is necessary on subsequent visits.

B.—All doubtful or unusual cases should be seen by the chief of clinic or consulting physician.

VII.

Standard for Treatment.

Relation to Public School System.

A.—The clinic should coöperate with the schools, social agencies and day nurseries, etc., by the diagnosis and treatment of referred cases. It is desirable that cases should be referred only from a specified district, mutually agreed upon, and that, so far as possible, cases should be referred by appointment in such numbers and at such hours as may be of greatest mutual benefit.

Convalescent or Country Care.

B.—Close coöperation should be maintained with the agencies providing convalescent and country care.

Consultation Facilities.

C.—There should be facilities for consultation in all required specialties.

Amount of Medicine.

D.—The amount of medicine dispensed should be sufficient to obviate the return of patients for medicine only.

NOMENCLATURE

Each diagnosis, to be complete, should include one or more titles from each of the groups A-*B-C-D. Groups E and F, of course, demand nothing but etiology.

A—ETIOLOGY

1—Unknown
2—"Rheumatic"
  a—Acute rheumatic fever
  b—Chorea
  c—Growing pains
  d—Tonsillitis
  e—Pharyngitis
  f—Others, as Purpura Arythema nodosum, etc.
3—Syphilitic*
4—Bacterial*
  Specify bacterium if possible
5—Thyroid*
6—Toxic
  a—Bacterial
  b—Mineral
  c—Vegetable
  Specify if possible
7—Neurogenic
8—General systemic disease. Specify the disease, *e.g.*, general arteriosclerosis, chronic nephritis, diabetes, etc.
9—Traumatic

*In the case of each of these conditions, it should be noted whether the etiological factor is still *active* or is *inactive*, *e.g.*, A—Active syphilitic, B—Aortitis with dilation, Aneurism of ascending aorta, C—Regular sinus rhythm, D—Class II A; or A—Inactive rheumatic (acute rheumatic fever), B—Valvular disease, mitral insufficiency, mitral stenosis, C—Auricular fibrillation, D—Class II B.

B—STRUCTURE

1—Atrophy of heart*
2—Enlargement of heart
3—Hypertrophy of heart
4—Cardiac infarction
5—Rupture of heart*
6—Cardiac thrombosis
  a. auricle
  b. ventricle
7—Myocarditis Acute
8—Myocarditis—Chronic Fibrous
9—Fatty infiltration*
10—Fatty degeneration*
11—Tumor of heart*
12—Endocarditis
  a. Acute
  b. Chronic
13—Cardiac Valvular Disease
  a—Aortic Insufficiency
  b—Aortic Stenosis
  c—Mitral Insufficiency
  d—Mitral Stenosis
  e—Pulmonic Stenosis
  f—Tricuspid Stenosis
14—Congenital Abnormality. Specify lesion if possible
15—Pericarditis
  a—Acute
  b—Fibrinous
  c—With effusion
  d—Serous, purulent
16—Adherent Pericardium
17—
  a—Hydropericardium
  b—Hemopericardium
  c—Pneumopericardium
18—Tumor of Pericardium
19—Aortitis
  a—Without dilation
  b—With dilation
20—Aneurism of—
  Specify affected vessel or heart
21—Embolism of—
  Specify affected vessel
22—Thrombosis of—
  Specify affected vessel
23—Arteriosclerosis
  General
24—Arteriosclerosis of—
  Specify locality as, coronary arteries cerebral arteries, etc.
25—Arteritis of—
  Specify locality
26—Periarteritis of—
  Specify locality
27—No circulatory disease
28—No cardiac disease
29—Undiagnosed

*While these diagnoses may sometimes be made clinically they generally necessitate a post-mortem examination.

C—PATHOLOGICAL PHYSIOLOGY

1—Regular sinus rhythm
2—Vagal arrhythmia
  a—Sinus arrhythmia
  b—Sino-auricular block
  c—Simple bradycardia
  d—Ventricular escape
3—Premature contraction
  a—Auricular
  b—Nodal
  c—Ventricular
4—Simple Tachycardia Sinus—not paroxysmal
5—Paroxysmal Tachycardia
  a—Auricular
  b—Nodal
  c—Ventricular
6—Auricular flutter
  a—Paroxysmal
  b—Chronic
7—Auricular fibrillation
  a—Paroxysmal
  b—Chronic
8—Auriculo-Ventricular heart block
  a—Partial block
    1—Prolonged conduction time
    2—Dropped beats
  b—Complete block
9—Intraventricular block
10—Neuro-circulatory asthenia
11—Valvular incompetency
  a—Mitral insufficiency
  b—Tricuspid insufficiency
  c—Pulmonic insufficiency
  d—Aortic insufficiency
12—Hypertension

D—FUNCTIONAL CAPACITY

1.—Patients with organic disease, but able to carry on ordinary physical activity.

2.—Patients with organic disease, but unable to carry on ordinary physical activity. (Cardiac Insufficiency.)

a.—Activity slightly limited.

b.—Activity greatly limited.

3.—Patients with organic disease, but unable to carry on any physical activity, *i.e.*, who must remain in bed or in a chair. (Cardiac Insufficiency.)

E—PATIENTS WITH ABNORMAL SIGNS AND SYMPTOMS

Not believed to be due to Organic Disease.
This diagnosis to be "not cardiac—Class E."

F—POTENTIAL DISEASE

Patients without circulatory disease, but whom it is advisable to follow because of the presence or history of an etiologic factor.

CRITERIA FOR DIAGNOSIS

It has not been our object to compile a complete manual of the physical signs of the various sorts of heart disease. We have attempted to set down only those physical signs which might be called critical—which have such a basic importance for the lesion in question that their finding demands the diagnosis and their absence makes it most unlikely. Where such critical signs do not exist we have tried to narrow down the facts upon which a diagnosis must rest to as small a number of features and as concise a statement as possible.

Secondary diagnostic features are not mentioned. By this is meant those signs which are frequently present along with the disease in question, but if found as the sole abnormality would be insufficient for a diagnosis. Such are, the sharp first sound of mitral stenosis, the Corrigan pulse of aortic regurgitation, the cardiac enlargement or hypertrophy, and the x-ray findings of mitral or aortic valvular disease, etc. We could not attempt to mention secondary diagnostic features in their proper proportions without greatly exceeding the scope of this work, and so have omitted them entirely. We do not mean, by this, to minimize their importance, for in certain circumstances they are indispensable aids.

There may be, accordingly, opportunities to make certain diagnoses, as aortitis, chronic myocarditis, and others, when the conditions here set down are not fully fulfilled. We believe, however, that diagnoses which rest upon features other than those here noted are precarious, and that the percentage of error in such diagnoses may well be as large as that resulting from a careful adherence to the features here stated.

We are confronted with one great difficulty—that of getting an agreement from different examiners on the qualities of the same sound. This may depend, in part at least, upon a sort of "tone deafness," but is, in part, a matter of training and habit. We are faced with the alternatives of not describing the qualities of sounds at all—only their timing—or of describing them in words on which the majority *do* agree, and hoping that those who would use different terms will be able to understand us.

There are certain details in the examination of the heart which we consider so important as to demand special notice.

Inspection of the veins of the neck for unusual engorgement or pulsation.

Palpation of the apex beat for its position and character.

Examination is not complete unless the patient is examined in the erect and dorsal positions. The neck veins, the apex beat, and the murmurs are all liable to change with position, and this change may give important informations. The neck veins, the apex beat, and the here.

Dullness extending to the left of the palpable apex beat may be due to pericardial effusion, or the nearness to the chest wall of the lateral aspect of the apex of the heart.

The importance of using certain special procedures for eliciting or ascertaining the murmurs of valvular lesions must be emphasized. The murmur of aortic regurgitation is usually best heard with a relatively slow heart rate, with the breath held in expiration, because its pitch resembles so closely that of the respiratory murmur, and with the patient standing bent forward about 45 degrees at the waist. That of mitral regurgitation is best heard with the patient lying on the back or in the left lateral position, and is louder after exercise. The murmurs of mitral stenosis are usually best heard with the patient in the left lateral position, and especially after exercise. The exercise should be sufficient to accelerate the heart rate to at least 120 per minute, and the examiner must listen immediately when the exercise is completed, for the typical signs of this lesion may last only a few beats.

Aortic Insufficiency.—The diagnosis can be made only in the presence of a typical murmur. Its quality is blowing, and of a pitch higher than that of the first heart sound, closely resembling the normal respiratory sounds, so that they may, at times, either obscure or simulate the murmur. It may be very faint, perhaps heard only with the ear directly applied to the chest, but if heard at all is definite evidence of an aortic leak.

This murmur is diastolic in time, beginning with the end of the second heart sound, perhaps fading out at any time during diastole, or perhaps lasting all through diastole until the first sound of the next beat.

It is best heard either: (1) in the third or fourth inter-spaces at the left border of the sternum, (2) over the sternum itself at this level, (3) in the second or third spaces at the right border of the sternum.

Aortic Stenosis.—The diagnosis can be made from a systolic thrill, felt best in the second space, near the right border of the sternum, and accompanied by a loud, rough systolic murmur, loudest at this place. (Aneurysm must be excluded as a cause of these.)

Without such a thrill, the diagnosis can be made, if along with the loud, rough systolic murmur, the carotid pulse is typically anacrotic, or has a noticeably slow rise to its wave.

Unless the murmur of aortic regurgitation is also present, the diagnosis of aortic stenosis must be made only with the most undoubted signs, even though a loud, rough systolic murmur is present.

Mitral Insufficiency.—The diagnosis can be made in the presence of cardiac enlargement, and of a typical murmur. Not all systolic murmurs at the apex denote disease of the mitral valve.

The murmur alone is not sufficiently typical to establish the diagnosis, but with other valvular disease or in children with a history of one or more rheumatic manifestations, a typical murmur may be considered to indicate a mitral leak.

The murmur is systolic in time, and may accompany, follow or replace the first sound.

It is best heard at or just outside of the region of maximum audibility of the first heart sound.

Its quality is extremely variable in different cases, either soft, harsh, blowing, or musical, but to be considered typical it must be prolonged, and of a relatively high pitch, higher than that of the first heart sound.

Mitral Stenosis.—The diagnosis can be made from the presence of the typical murmur. If the murmur of mitral insufficiency is also present we may consider a prolonged murmur (one longer than the first heart sound) of low pitch and rumbling quality, beginning a brief instant after the second heart sound, and of either short or long duration (mid-diastolic) to indicate an early mitral stenosis. There may or may not be a rough crescendo accentuation immediately before the first heart sound of the following beat (presystolic).

Without the murmur of mitral insufficiency, the rumbling murmur must be accompanied by a crescendo presystolic element.

In certain cases the presystolic crescendo murmur may be the only one present.

These murmurs of mitral stenosis can sometimes be heard only when the patient is lying on the back or on the left side. They are almost always louder in these positions than with the patient erect. The presystolic crescendo is most liable to be heard after exercise, with the patient in the prone or left lateral position.

Austin Flint Murmur is a murmur which simulates those of mitral stenosis. It is not due to this, but indirectly to an organic aortic insufficiency. It is, by the description of its discoverer, a rare murmur, and the differentiation from mitral stenosis is difficult, resting largely upon the absence of the secondary diagnostic features of this lesion, and the presence of aortic insufficiency. The diagnosis should be made only after the most careful exclusion of the possibility of a mitral lesion.

Triscuspid Insufficiency.—A prolonged systolic murmur of blowing or harsh quality, heard best at the level of the fifth chondro-sternal junction, either over the sternum or just to the left of it, may be considered suggestive of tricuspid regurgitation if the heart is definitely enlarged to right and left, and shows other murmurs. This condition is never present except in association with other cardiac disease, and is more usually due to valvular incompetency than to valvular disease.

Either or both of the following should be noted in conjunction with the characteristic murmur, and in the absence of both of these signs the diagnosis is precarious in spite of the presence of a murmur.

1. Systolic pulsation of the external jugular veins with prompt filling from below when the vein is stroked upward to empty it. (Carefully distinguish this sign from the normal presystolic pulsations and from the systolic venous pulsations occurring with auricular fibrillation.)

2. Systolic expansile pulsation of the liver. (Carefully distinguish this from the movement transmitted from the abdominal aorta or from the heart through the diaphragm.)

Tricuspid Stenosis practically never occurs except associated with lesions of other valves, and then is most difficult to diagnose, owing to the similarity of the murmur to that of mitral stenosis, which is usually also present. A point of maximum intensity over the lower sternum is a suggestive feature.

Pulmonic Insufficiency is a rare condition. Its diagnosis is rarely possible owing to the similarity of the murmur to that of aortic regurgitation. It demands a much accentuated second sound at the pulmonic area and the presence of a lesion of the mitral valve.

Congenital Lesion.—The diagnosis of congenital lesions is made more likely by the presence of cyanosis, chest deformity, or clubbing of the fingers.

(1) *Pulmonic Stenosis.*—A loud, rough systolic murmur, heard best in the second left space, near the sternum, and accompanied by a plain thrill over this area, would enable us to diagnose pulmonic stenosis.

(2) *Patent Ductus Arteriosus.*—With a long, whirring or harsh murmur, beginning in systole and continuing through both systole and diastole, or with a double accentuation both in systole and diastole, we may diagnose a patent ductus arteriosus. Patent ductus may be associated with only a systolic murmur, and is then to be distinguished from pulmonic stenosis, if a systolic thrill is present, by its less harsh and more whirring character; but if a thrill is absent, a patent ductus is more apt to be the cause of the murmur.

(3) *Patent Interventricular Septum* can be diagnosed from a prolonged, loud, harsh systolic murmur, heard best over the lower sternum and widely transmitted.

Cardiorespiratory Murmurs are usually heard at the apex of the heart, but perhaps also at the angle of the scapula behind, rarely in other situations. They are systolic in time almost always, and have much the same quality as the normal respiratory sound, suggesting an inspiration interrupted by each systole of the heart. They vary in loudness during the respiration, and are not loudest in expiration as are the murmurs of mitral insufficiency. They may, however, be increased in loudness by exercise. They are usually present at one phase of the respiratory act.

Unexplained Murmurs (so-called functional, accidental or hemic):

1. The systolic murmur of either soft, or harsh, or rough quality at the pulmonic area is the commonest of these.

2. A harsh systolic murmur, maximum over the lower sternum, is also common.

3. Other murmurs occur, some even diastolic in time. They are not like those described for valvular lesions. None of them indicate cardiac disease and they are of no significance. The mode of their production is unknown.

Cardiac Hypertrophy.—It is considered to imply a certain coincident dilation. It may be considered present if the apex beat has a strong heaving impulse and is felt outside of the midclavicular line. One must discount the results of thinness of the chest wall and of a physical displacement of the heart, especially that produced by a high diaphragm.

A thick chest wall or emphysema may at times prevent there being a heaving apex impulse. Under such circumstances, it seems more conservative to diagnose cardiac enlargement than to speculate on the likelihood of hypertrophy being present.

Cardiac Enlargement includes dilatation with hypertrophy and without hypertrophy. It may be considered present when the area of cardiac dullness of the x-ray shadow of the heart is abnormally large. The normal limit of dullness to the right in the fourth space may be considered as 1 cm. beyond the sternal margin; in adults, 2 cm. would not be abnormal, and to the left in the fifth space, as at the mid-clavicular or nipple line. The heart shadow, in a teleoroentgenogram should measure one-half of the transverse chest diameter or less. Here, too, as with hypertrophy one must consider the results of thinness of the chest wall and of displacement of the heart and the habitus of the individual.

Myocarditis.—By this is meant an acute or chronic inflammatory or degenerative lesion of the heart muscle. It bears no definite relation to myocardial insufficiency, for this may result from myocarditis or may be present in its absence.

The only direct physical signs of myocardial disease are:

1. Faintness of the first heart sound in the presence of a plainly palpable apex beat.

2. A permanent presystolic gallop rhythm, practically a double first sound, with the accent on the second half.

3. Abnormality of the ventricular waves of the electro-cardiogram, *i.e.*, permanent notching or widening of the Q. R. S. group or abnormality of the T. wave.

4. The presence of permanent auricular fibrillation, or auricular flutter indicate disease in the auricular tissue, while continued heart block indicates disease of the auriculo-ventricular tissue. The area giving rise to the rhythm disturbance is the site of the disease, and this may affect other parts of the heart little or much in different cases. Myocarditis may give rise to extra-systole and tachycardia, but these often arise from other causes also.

Without any of these signs, the diagnosis can only be made if there are symptoms of cardiac insufficiency with or without cardiac enlargement, and only then if these symptoms cannot be explained by a coincident valvular disease, marked hypertension (210 or over) or adherent pericardium, or by some extra-cardial condition, such as anemia, pulmonary disease, obesity, etc.

Myocarditis may coexist with any of these disease conditions, but the diagnosis is precarious if the symptoms could be explained by the disease alone, and should under these conditions, only rest upon the presence of an arrhythmia or of abnormal ventricular waves in the electrocardiogram.

Aortitis at some stage of its progress will give rise to a long, rough systolic murmur at the aortic area, like that of aortic stenosis, but without the typical thrill being felt. A thrill may be felt over the carotid arteries, however. At a certain stage the x-ray will show abnormal systolic excursion of the aortic shadow, an increased capacity and a distortion due to lengthening of the tube. The diagnosis can be made from the x-ray findings with or without a murmur being present. The diagnosis can be made without the x-ray signs, with a harsh murmur as described, especially if this is plainly heard over the carotid and subclavian arteries and without aortic regurgitation being present.

Aortitis may exist and give rise to symptoms without either of these signs being present, but a diagnosis resting on symptoms alone would be precarious.

Committee on Cardiac Clinics of the New York Association for the Prevention and Relief of Heart Disease:

William St. Lawrence,
Chairman,
Dr. E. P. Maynard,
Dr. Harold E. B. Pardee,
Dr. Marcus A. Rothschild,
Dr. John Wyckoff.

Book Reviews

The Treatment of Fractures. By Charles L. Scudder, M.D., Consulting Surgeon to the Massachusetts General Hospital. Ninth edition. Philadelphia: W. B. Saunders Company. $8.50.

In no branch of surgical therapeutics are the methods of obtaining a common end so diverse as in the treatment of fractures. The result in a given case or group of cases does not necessarily depend so much on the application of a certain form of apparatus as it does upon the complete knowledge which the physician has obtained of the method used. Regional conditions, availability of apparatus, as well as individual experience, all play important rôles in this selection.

The author is thoroughly cognizant of these fundamentals and accordingly does not attempt to designate any one best method for the treatment of a fracture, but undertakes to place before the reader such procedures as have been found valuable in the hands of others, as well as himself.

This volume, now in the ninth edition, has accordingly become encyclopedic with reference to certain of the commoner types of fractures, although in no instance so comprehensive as to include methods which have not been thoroughly and competently tried out.

As in all forms of traumatic surgery, the world war has opened the gates to new methods in fracture treatment and afforded means of practicing others of unknown value. With this in mind, much new material has been added to this edition and several chapters entirely rewritten. The Carrel-Dakin method of treatment of compound fractures and the suspension and traction methods are exemplified as regards their application to fractures of civil surgery.

The profusion of illustrations with subjacent legends, as in past editions, are of the greatest value in aiding the interpretation of text descriptions.

The book still retains its eminent position as a safe guide for those whose experiences with fracture surgery is general rather than special.

Procedures in Nursing: Part I. Preliminary Procedures. By ANNABELLA MCCRAE, Instructor in Practical Nursing at the Massachusetts General Hospital Training School for Nurses. Boston: Whitcomb and Barrows. $1.50.

Within recent years, in all branches of the profession of medicine, efforts have been directed toward the standardization of basic therapeutic principles and their application. In this book the author has recorded in book form for the first time the nursing procedures which have become standardized at the Massachusetts General Hospital in the melting-pot of the past twenty years.

Each method is carefully detailed so that the procedure may be readily visualized even without the aid of the numerous illustrations. The text has been arranged in appropriate subdivisions in such a fashion that the subjects may be easily referred to by the pupil nurse or instructor. Such facility must necessarily be reflected in the better care of patients.

Although primarily intended for the nursing profession, this book may well be recommended to the attention of medical students. Likewise much of interest and value will be found within its pages by physicians, especially those connected with training schools either in a clinical or administrative capacity.

A Text-Book of Chemistry for Nurses. By FREDUS N. PETERS, A.M., Ph.D., formerly Professor of Chemistry and Director of Laboratories, Kansas City College of Pharmacy. Second edition. St. Louis: C. V. Mosby Company. $2.50.

In this small text-book the author essays to describe in a simple manner the pertinent facts regarding the principles of chemistry which enter into everyday life, as well as the hospital and commercial undertakings. That this aim has been accomplished is witnessed by the demand for this second edition.

Brief historical descriptions, clear expositions of fundamentals, and short paragraphs illustrating the application of chemical reactions are interestingly combined without sacrifice of scientific accuracy.

The lucid style makes the reading a pleasure rather than a burden for the nurse whose time is always filled to overflowing with theoretical instruction as well as practical duties.

The text is divided into chapters, taking up individually the chemical elements and families. A chapter on poisons, and an appendix containing a variety of tables, together with a glossary and ample index, are important adjuncts in making this a valuable reference book for the layman as well as for members of the nursing profession.

Obstetrics for Nurses. By CHARLES B. REED, M.D., 2nd Edition; 144 Illustrations with two colored plates, $3.50. St. Louis: C. V. Mosby Co., 1923.

An excellent exposition on obstetrics for nurses containing, however, much that many nurses are not sufficiently well educated to grasp. Many of the statements would be much better understood by the average nurse had the author explained more fully the reasons for them.

There is no adequate description of the duties of a nurse when she finds herself forced to deliver a case alone, yet careful directions are given how a head may be held back two hours in order to prevent a "precipitate." The statement that ophthalmia neonatorum is caused by the gonococcus is only telling part of the etiology, and in a nursing textbook is very dangerous.

The illustrations are on the whole well chosen, but the one of a delivery on the side is totally inadequate and wrong.

The tables, diets, formulae, glossary and index all add to the value of the book.

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY

RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.

F. M. PAINTER, ASSISTANT EDITOR

CASE 9461

An American housewife of twenty-four entered September 18, 1923, semi-delirious. The history was given by her husband.

F. H. Good so far as known.

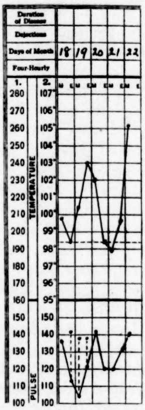
P. H. Except for whooping-cough at six years, an occasional sore throat, frequent headaches, and occasional fainting on excitement, she was always well up to her marriage at twenty-two. At catamenia she had occasional cramping pains and rather severe headaches. Her teeth ached a great deal during her first pregnancy. Her bowels were constipated. Her physician gave her pills to cause a miscarriage during her present pregnancy. When these failed an abortion was planned but postponed because of her condition.

P. I. Her first child was born May 30, 1922, weighing 12 pounds 3 ounces. She had a hard labor, receiving bad tears with marked relaxation. A month later with no warning or intercurrent infection she began to have pains and stiffness in the joints of the arms and legs, and moderately high fever for several days. The pains prevented sleep and lasted a month. Then they ceased and the stiffness gradually disappeared. A physician gave her capsules which made her sweat and seemed to give her relief. Several other physicians were unable to make a diagnosis. By January, 1923, she was feeling so entirely well that she thought it unnecessary to have perineal repair done. Early in July she had a severe sore throat lasting several days, and developed a harsh cough, unproductive except for a slight froth, occasionally reddish, very recently heavier and brown, with much water. The cough soon caused nausea and vomiting. About July 9 she became very dyspneic on the slightest exertion. Her last catamenia began on this day and lasted ten days. July 10 she fainted, recovering a few moments later with great suddenness. August 1 a physician ordered her to stay in bed on a salt-free low-protein diet. The patient disregarded both orders, and continued to climb fifteen steps many times daily because of frequency which developed at this time, seven times to every hour by day, four to six times at night. She also developed great thirst, drinking about a gallon daily. The middle of August she developed dysuria and edema of the ankles which soon spread up to the hips and sacrum. A week later her abdomen began to swell. Three weeks ago her urine suddenly shut off and she passed only two or three ounces a day, though still drinking a quart of water and two quarts of milk. A week ago large lumps appeared over night on the sacrum, thigh and knee, subsiding in several hours without treatment. She had vomited steadily and had been able to keep hardly anything down during the past week. A visiting nurse reported that the patient had a high fever four days ago, but not on the few occasions the temperature had been taken later. The cough had improved somewhat.

P. E. A well nourished, orthopneic, slightly pale and cyanotic young woman with marked anasarca. Complete examination could not be done on account of her condition. Apex impulse of the *heart* seen and felt in the fifth space 14 cm. from midsternum in the midaxillary line. Sounds forceful, very rapid (150), regular. A loud blowing systolic and rumbling diastolic at the apex and a blowing systolic and diastolic along the left sternal border and at the aortic area. The systolic was heard all over the precordia and in the back. Collapsing pulses. Marked pulsation in carotids. Pistol shot over the brachials. *B. P.* 205/0—205/25. *Electrocardiogram* September 18. Auricular flutter, 2:1 block. Auricular rate 300. Ventricular rate 150. Small complexes in all leads. September 20 the same. *Lungs.* Considerable fluid at the right base, where there was flatness, absent fremitus, diminished and bronchovesicular breathing. Rest of lungs resonant. Compensatory breathing. Moist râles at the left base. *Abdomen.* Protuberant umbilicus. Dullness in flanks. Fluid wave. *Extremities.* Marked edema. Edema over sacrum.

T. and *P.* as shown in the chart. *R.* 24-48-14. *Urine.* ℥ 25-40 on the three days recorded. Sp. gr. 1.028, a trace of albumin at the single examination, occasional leucocytes, rare large hyalin casts. *Blood.* Hgb. 80%-85%. Polynuclears 78%. Leucocytes 17,200-27,800. Reds and platelets normal. *Wassermann* negative. *Non-protein nitrogen* 46.8 mgm. *Stools* negative.

Orders. September 18. Digitalis leaves gr. vi by mouth at once, then gr. iii every three hours. Morphia gr. 1/6, three doses. Digifolin gr. iii intravenously, two doses; gr. iii intramuscularly, two doses. Paraldehyde ʒ i intravenously. Caffein gr. xx intramuscularly p. r. n. for Cheyne-Stokes breathing. Karell diet. September 19. Digitalis gr. iss 5 i. d. by mouth. Bender bandages to legs. Chloral hydrate gr. x by rectum at 10 a.m. and 8 p.m. $MgSO_4$ ℥ ss in the morning. Digifolin gr. iii intramuscularly 2 i. d. Triple bromides gr. xxx by rectum. Water ad lib. in small sips. Hyoscin gr. 1/150 s. c. September 20. Veronal gr. x. Hyoscin gr. 1/200 s. c. Digitalis gr. iii intramuscularly 2 i.d. Quinidine sulphate gr. iii by mouth at 8 p.m. If no toxic symptoms result give quinidine sulphate gr. iii 2 tablets every three hours for five doses beginning at 7 a.m. tomorrow. Veronal gr. x. September 21. Veronal gr. x. Pantopon gr. 1/3 s. c. September 22. Repeat quinidine order of September 20. Pantopon gr. 1/3 s. c., repeat in three hours. Caffein sodium salicylate gr. xx intramuscularly, two doses.



September 19 absolute irregularity of the heart was noted, and sounds of poor quality. The patient was extremely apprehensive and at times delirious. Digitalis had to be given intramuscularly because of vomiting. The auricular flutter at admission soon changed to auricular fibrillation. The morning of September 20 the pulse was regular at 134, with no deficit. Diuresis had not been established, though the patient voided 300 c.c. that morning. September 21 there was noted an occasional run of bigeminal pulse with questionable dropped beats. September 22 Dr. Paul White noted, "Auricular flutter with 2:1 auricular-ventricular block unusually resistant to digitalis. There was practically no increase in the block even after more than 1.2 grams of digitalis intravenously and intramuscularly in two days. Failure also of quinidine sulphate (2 grams in five doses in one day) to abolish the flutter. Intravenous digitalis should be resumed today, 0.2 gram twice." That day the patient died.

Discussion

BY DR. RICHARD C. CABOT

NOTES ON THE RECORD

1. I do not know what is the significance of the "suddenness" of a person's recovering from a faint. Of course one who comes out of a hysterical attack often comes out more suddenly than from a fainting attack, after which one is rather dazed. But I do not think we can conclude anything in particular from this.

2. In August she presumably had edema and evidence of nephritis.

If we sum up the evidence we have before beginning the physical examination we seem to have had a sepsis following labor, characterized by joint pains and fever; after that she seemed to get well for about eight months and have no particular symptoms; then she begins to have cough, dyspnea, fainting, and is soon put upon a low-protein diet, so that presumably somebody has found albuminuria along with thirst and general edema. Then besides there are some lumps which we do not very well account for, and about which so far I have no guess. All of this points pretty clearly either to a heart lesion or a kidney lesion or both, and we may suspect, certainly, that they are related to this attack of multiple arthritis, or rather to the septicemia of which that is itself a symptom. She has not had any definitely uremic symptoms, but the small amount of urine and the fact that she comes in somewhat delirious, while we have not heard of any very acute symptoms of broken compensation, seem to mean that the kidney is affected more than the heart, if the heart is affected at all.

NOTES ON THE PHYSICAL EXAMINATION

The temperature went up and down very strikingly. The pulse was always high.

The physical examination has gone quite differently from the way I thought it was going. It does not point at all toward any renal lesion, as I thought there would be, and it does point definitely to a cardiac lesion and especially to the aortic valve. The chances of there being also a mitral lesion are good, although the data are not very complete on that point.

With that leucocytosis, with the age of the patient and the course of her disease, it seems to me an acute on top of a chronic endocarditis is quite possible. Was that the second flutter on September 22, Dr. White?

Dr. Paul D. White: It is not certain that she had ever changed. It is possible that it was always flutter, with varying grades of block in between the two periods of regular pulse.

Dr. Cabot: I take it that these murmurs were heard at some time when the heart was not having such a flutter as this. I should not suppose they could make out as much as is given in the record with an auricle going at 300 and a ventricle at 150.

Dr. Bock: Those murmurs were heard when the heart was beating very rapidly, and it was hard to be absolutely sure of them.

Dr. Cabot: We shall not take them, then, quite so seriously as if we had heard them with a slower heart.

Of course this is a case when pericarditis may be present, and all sorts of sounds may be attributed to the valves when they may be due to pericarditis.

We have no good evidence of nephritis, though the history certainly suggested it strongly. We lack one thing that I should like very much,—that is the measurement of renal function by the red test. But from the examination of the urine and the non-protein nitrogen I do not see how we can say there is any nephritis.

Dr. White: Even if there were a "red test," with the congestion of the kidneys we should not have much help from it in this case.

Dr. Cabot: I have had a great deal of help from this test in the few days before death. A zero function has never gone with passive congestion of the kidneys and has always gone, in my experience, with a marked destructive lesion of the kidney, either nephritis or some surgical affection. When it has been 10 per cent. or more it has often been passive congestion. It is the readings between 10 per cent. and zero that seem to me really helpful.

DIFFERENTIAL DIAGNOSIS

I suppose this is a rheumatic type of heart. She is at the age when most heart lesions are such. There is no reason to suspect syphilis. So we may suppose the lesions in the heart are such as we find with rheumatic attacks. We have every reason to suspect both the mitral and aortic valves. At her age I do not see how she could go into a flutter and die of it without some valvular lesion. So it seems to me that this is a rheumatic valvular lesion and not merely a pericarditis, although there may be a pericarditis too. When we go beyond that, I feel pretty uncertain,—that is, whether it is acute or chronic or both acute and chronic I do not know. The chief thing in favor of a chronic lesion is the height of the systolic blood pressure. If she had merely an acute lesion it does not seem as if she would have ventricular hypertrophy enough to lift the pressure to 200.

If then it is chronic endocarditis, statistics show that it is generally on the mitral valve. But there is pretty definite evidence from the extraordinary pulse pressure that there is something on the aortic too. So it seems to me safe to say that she has chronic lesions on both the aortic and the mitral valve. In view of the fever, there is considerable chance of an acute lesion in addition to the chronic which I have to believe is present.

Why didn't she have emboli? I do not know. We have a good many cases of acute endocarditis that do not show emboli. I think there is more than a good chance that there will be emboli or infarcts in the internal organs,—renal infarcts being perhaps the commonest, spleen and liver next. She may very well have an intracardiac thrombus, though we did our best with quinidine to get it out and did not get it out! It may still be there.

That is as far as I can go on the heart. Outside the heart I do not see why there should be anything except passive congestion. We miss pericarditis so often that it is always worth while to say, "it may be there," even though we have no friction rub. I see no evidence of peripheral thromboses or embolisms, and that therefore is as far as I can go.

Dr. White, you saw this patient in life. I should like to know any impressions that you can communicate as from that period before you knew what it was.

Dr. White: I saw her once, I think on the 21st or 22nd of September. At that time her pulse was regular, 150, and so fast that I was not sure about the murmurs. That is, there were no clear murmurs at that time.

Dr. Cabot: How fast was it, Dr. Caner, when you put the murmurs down?

Dr. Caner: It was about 150. I was not sure of the murmurs.

Dr. White: It seemed that rheumatic etiology, as I remember, was most probable because of the history. The patient evidently had marked congestive failure; the flutter of course could account for that, just as in auricular fibrillation one may have congestive failure simply due to the rapid ventricular rate. Very rarely is either flutter or fibrillation found without pathology of the heart muscle back of it. With a weakened or diseased heart muscle flutter and fibrillation can cause death even without valve change. We should expect valve change with myocardial disease following infection. She was too young for the arteriosclerotic type of heart disease and had no evidence of thyroid disease. She was unusually resistant to digitalis and quinidine. Nothing changed her flutter.

Dr. Cabot: If we take these blood pressures as correct, and I see no reason to disbelieve them, haven't we got practically to say that she has aortic regurgitation?

Dr. White: Were they taken more than once?

Dr. Bock: I took the blood pressure once and got a diastolic pressure of 35 and a systolic pressure of 210.

Dr. Cabot: Then we have a good certain record there. Is there any way of escaping the conclusion that there must be aortic regurgitation?

Dr. White: No. I don't remember ever having seen blood pressure of that sort in the absence of aortic regurgitation.

Dr. Cabot: I am driven to that because if it is not as you say, it is the first time I have ever seen such a thing. The mitral lesion I am speaking of merely because mitral lesions are commoner than aortic lesions in rheumatic hearts, though in view of what Dr. White said about the difficulty of hearing any murmurs when he listened I do not see that we have much to go on there.

Dr. Bock: I listened to her several times, and in spite of the rapid rate I think she had a diastolic murmur at the left border of the sternum. The thing that interested me was that this was the first attack of cardiac failure, and to have death result from it seemed a very unusual thing for rheumatic heart disease. We thought then there must be some very unusual circumstance about the heart.

Dr. White: Don't you suppose that was solely due to the fact that we were not able to bring down the ventricular rate?

Dr. Cabot: She has been at it for two months, so it was a pretty long attack even though it was the first, as you said. You didn't discover any pericarditis?

Dr. Bock: No, sir.

Dr. Cabot: Did you believe, as I do, that there is no evidence of nephritis?

Dr. Bock: We thought there was none, or very little.

A Physician: What significance would you attach to the temperature?

Dr. Cabot: It makes me suspect acute endocarditis associated with intracardiac or peripheral thrombi, with no other infectious lesion in the body. I believe that these thrombi are infectious, so I call these infectious lesions. Admitting that thrombi might cause this fever it seems to me a little more likely that this is an acute and chronic rather than a chronic endocarditis alone.

Dr. Edward L. Young, Jr.: I should like to ask Dr. White if he has ever had reason to suspect the accuracy of the red test in cases like this?

Dr. White: It is of very little help to me when there is congestive failure, because it is always markedly reduced.

Dr. Young: What do you mean by "markedly reduced"? I have always believed that it was accurate.

Dr. White: As low as 10 or 15 per cent.

Dr. Young: But not below. You do not ever get an absent or trivial test. I have always believed with Dr. Cabot that it is accurate with that limitation,—that it won't be zero or below ten unless there is bad damage.

Dr. White: But we often get, even with nephritis, a test of 10 or 15 per cent.

Dr. Young: I have never seen it above 10 with the nephritis fatal as such. It has to go pretty low.

Dr. White: But when there is a moderate degree of nephritis the phenolsulphonephthalein test of renal function will not distinguish between the nephritis and a renal engorgement due to congestive failure in heart disease.

Dr. Young: That may be true, but in that case the patient is killed by the heart and not by the kidneys, and the test is accurate.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Rheumatic heart disease, with mitral stenosis and aortic regurgitation.
Congestive failure.

DR. RICHARD C. CABOT'S DIAGNOSIS

Chronic endocarditis of the mitral and aortic valves.
Aortic regurgitation.
Thrombosis.
Pericarditis?

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Slight chronic endocarditis of the mitral and aortic valves.

2. *Secondary or terminal lesions*

Hypertrophy and dilatation of the heart.
Slight chronic passive congestion.
Slight hydropericardium.
Hydrothorax.
Ascites.

3. *Historical landmarks*

Chronic pleuritis, right.
Obsolete tuberculosis of two bronchial glands.

Dr. Richardson: The anatomical conditions found in this case seem insufficient to account for the heart hypertrophy present.

There was well marked ascites,—3000 c.c. of pale straw-colored fluid in the peritoneal cavity.

The right pleural cavity contained 1200 c.c. of thin pale straw-colored fluid, with about 200 c.c. on the left,—hydrothorax, slight on the left, well established on the right. There were a few old pleural adhesions. Two of the bronchial glands showed obsolete tuberculosis. There was nothing in the lungs except chronic passive congestion.

The pericardium contained 200 c.c. of fluid,—slight hydropericardium. The surfaces were smooth. The heart weighed 560 grams; that of course means considerable hypertrophy. The right ventricle wall was 5 mm., the left 12 mm. The columnae carneae were well marked on each side. There was a little dilatation on the left, a moderate amount on the right. The mitral valve measured 7.5 cm., the aortic 5.7 cm., the tricuspid 12 cm., the pulmonary 8 cm. There is nothing there except that the mitral valve is slightly stenosed,—not very much. The valves themselves were out of the picture except that on the aortic and the mitral valves there was a slight amount of chronic endocarditis in the form of irregular fibrous patches, in the case of the mitral extending up on the wall of the auricle,—that is, mural endocarditis. The patches were not very large or thick. On the aortic cusps the change was slight. The coronaries were perfectly free so that the heart muscle was being nourished. The conditions in the heart and elsewhere are inadequate for the production of a heart weighing 560 grams. The case drops into that group which we call idiopathic. The aorta and great branches, the pulmonary veins, the venae cavae and the circulatory apparatus generally were frankly negative.

There was some edema of the lower extremities and the dependent portions of the trunk.

We were not permitted to examine the head.

There were a few small fibromyomata in the uterus, and a note was made that no evidences of pregnancy were found. There must have been a question of that.

Dr. Bock: A physician who treated her outside thought she was pregnant. We did not think so.

Dr. Richardson: There was no previous history in regard to the ingestion of anything?

Dr. Bock: She had had no period for three months. An abortion had been attempted by giving something by mouth.

Dr. Richardson: Was a blood culture taken during life?

Dr. Bock: I don't know. Was there a microscopic examination of the heart muscle?

Dr. Richardson: Yes; the myocardium was negative. The heart culture at necropsy was negative.

Dr. Cabot: The question is of poisoning—whether she died of something that is not in our history at all, that is of some chemical and not anatomical cause. We have never heard, however, of a poisoning that gives a systolic and diastolic murmur, as Dr. Bock got it, and a systolic pressure and pulse pressure such as you have described. This is certainly an extraordinary case. I have been over all the cardiac cases in this hospital quite recently, and I don't think we have any cases at all like it.

Dr. White: There is one further note to be added. Dr. Segall tells me that he made an examination of the myocardium and found Aschoff bodies in it, which would put the case in the rheumatic class. She must have had a rheumatic heart anyway. But why the heart was so big I do not know. However, if she had so high a pressure for a long time the reason for the hypertrophy would be obvious.

Dr. Cabot: But you have to go one step back of that and ask what gave her the high pressure.

Dr. White: I do not know; but the hypertension would explain the size of her heart. It is possible that the aortic regurgitation was functional. That does occur sometimes in weakness of the myocardium before death.

Dr. Cabot: Of course Sir Clifford Albutt and most people following him now talk about primary hypertension independent of sclerosis or nephritis—hyperpiesia. Suppose she had hyperpiesia—that might account for the big heart. It would not, however, account for the pulse pressure readings so far as I can see. I never knew anybody to have hyperpiesia so young, but I do not know that we can be sure that people as young as that do not have it. The case, so far as I see, remains a mystery. We do not know why she died.

A Physician: How do you explain the temperature now?

Dr. Cabot: I do not explain it. There is nothing in the post-mortem to explain it.

Dr. White: I think the cause of death is clear,—congestive failure from the uncontrolled flutter in rheumatic heart disease.

Dr. Cabot: Yes, that is all right.

Dr. White: Flutter or fibrillation can occur as a result of myocardial damage in any arteriosclerotic or rheumatic or thyroid heart.

Dr. Cabot: But there is no evidence of myocardial damage. Would this case tend to establish in your mind a group of cases in which flutter and fibrillation, one or both, may cause death even without any very considerable anatomical basis?

Dr. White: Yes, there are such cases rarely; most cases are associated with valve lesions of higher degree than she showed; ~~but the valve~~ lesion itself does not cause death of course.

Dr. Cabot: From the specimen I should not know there was anything the matter with the aortic valve.

Dr. White: The mitral lesion resembles a little the healed type of subacute bacterial endocarditis of which Libman writes. But it looks healed; it does not look like an acute process.

Dr. Cabot: I think that is the most astonishing thing I ever saw. There was plenty of evidence of passive congestion, wasn't there?

Dr. Richardson: Yes.

A Physician: How does auricular fibrillation affect the blood pressure in the absence of definite valve incompetence?

Dr. Cabot: The blood pressure is low in such cases, though it is rather hard to measure. The case is an entire mystery to me. I do not know what happened. We certainly cannot say it was all poisoning, because there was evidence of definite passive congestion, and because she was here under observation for six days.

Dr. Richardson: There are cases where we do not get even as much of a lesion as that. We have had hearts weighing up to 700 or 800 grams where we did not get any evidence of a valvular or pericardial lesion.

Dr. Cabot: But the patients are not so young.

Dr. Richardson: Not as a rule.

A Physician: In what way would the hypothetical poisoning affect the heart,—by weakening the heart muscles so as to give incompetence?

Dr. Cabot: I was supposing that she had a heart lesion of moderate degree and then was killed by something else, not through the heart. But that is a mere guess and does not seem to me probable.

A Physician: She had all the evidence of incompetence.

Dr. Cabot: She certainly had.

◆

CASE 9462

An American chauffeur of twenty-eight was referred from the Consultation Clinic June 22, 1923, for relief of numbness of the body and limbs from the waist downward and inability to walk.

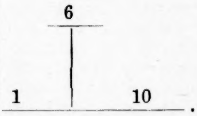
F. H. Unimportant.

P. H. He had had measles, whooping-cough and mumps. Five years ago glands in the neck and axillae discharged over a period of three years until excised (curetted). After this they promptly healed. He lost no more than six pounds in weight and no strength or appetite. He did not know that he had fever. During the past winter and spring he frequently had sharp darting pain in the regions of the sixth and seventh ribs in the right nipple line noted only on bending or jarring. He thought he had gained weight.

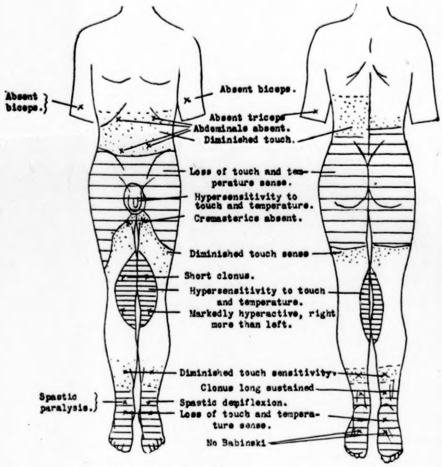
His personality created a confidence that the history was reliable.

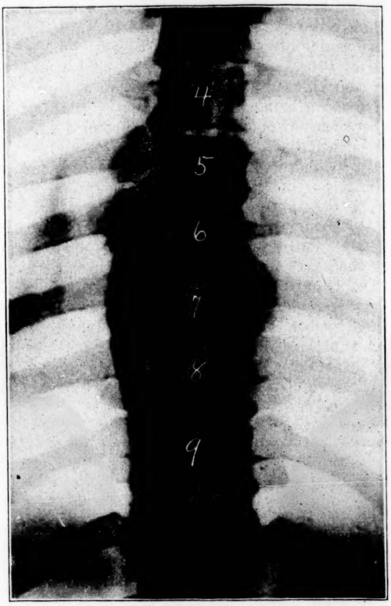
P. I. Eleven weeks ago his legs began to "go to sleep" at night. At first on stirring about in the morning the sensation returned and he could walk with a cane. Gradually the sensation failed to return, and walking became impossible without two crutches. At this time, five days ago, he consulted a physician. The process had been entirely painless. There was only tingling, burning and numbness. Since the onset his bowels had not moved without catharsis. He had difficulty in starting the urinary stream. Aside from the paralysis he felt perfectly well.

P. E. A fairly well developed and nourished man with a large number of contracted non-pigmented scars on the front, back, sides and base of the neck, down on the clavicle, and in both axillae. These were superficial, did not seem to involve the subcutaneous tissues much, though they were over the principal lymph chains in each area. The lymph nodes of these areas were not enlarged or palpable; perhaps the superficial ones had been removed at operation. Face convex and adenoid in type. Mouth open for respiration. Nose somewhat obstructed, probably posteriorly, although the septum also was bent. Teeth bunched in an irregular formation. Throat injected. Tonsils large and ragged. Tongue protruded in midline with slight fibrillary twitchings of the edges. Tongue musculature in the lateral portion of the anterior two-thirds seemed atrophic. The whole tongue was quite thin. Some stiffness of the neck, spine, hips and left leg. Right leg very spastic,—only passive motion. No tenderness over or displacement of any of the vertebrae. No deformity. Apex impulse of the *heart* felt in the sixth space. Percussion measurements as shown in the diagram. A2 accentuated. Moderate sinus arrhythmia. *B. P.* 105/65. *Lungs.* Fine crepitant râles over several small areas at the right apex and the side of the right lung. Bronchial breath sounds seemed to extend out into the sides somewhat more than usual, causing the hilus to seem enlarged posteriorly both to percussion and auscultation. *Neurological examination.* Very slight lateral nystagmus. Tremor of both lids. Tremor of edges and atrophy of sides of two-thirds of tongue. Reflexes: absent biceps, triceps, abdominals and cremasterics. Ankle clonus long and sustained. Knee-jerks markedly hyperactive, right more than the left. (See diagram.) Right leg and hip showed spastic paralysis, left leg spastic paresis. No atrophic changes. Muscle and joint sensations unchanged. *Genitals* normal. *Pupils* irregular, otherwise normal.



T. normal until June 26, then 98.4°-100.4°. *P.* 60-89. *R.* normal. *Urine.* ℥ 25 on the two occasions recorded. Sp. gr. 1.024. Reaction neutral. No albumin, sugar, pus or blood. *Blood.* Hgb. 80%, leucocytes 7,000, polynuclears 80%, reds 5,608,000, considerable anisocytosis, some true microcytes, slight polychromatophilia, platelets normal. *Wassermann* negative. *Non-protein nitrogen* 42.9 *X-ray.* No definite pathology in the chest. Spine showed hypertrophic changes on the anterior margins of the bodies of the vertebrae in the upper dorsal region; otherwise negative. Skull showed a small area of calcification in the region of the pineal tubercle; otherwise negative.


Absent biceps.
Absent biceps.
Absent triceps
Abdominals absent.
Diminished touch.
Loss of touch and temperature sense.
Hypersensitivity to touch and temperature.
Cremasterics absent.
Diminished touch sense
Short clonus.
Hypersensitivity to touch and temperature.
Markedly hyperactive, right more than left.
Diminished touch sensitivity.
Clonus long sustained
Spastic paralysis.
Spastic dorsiflexion.
Loss of touch and temperature sense.
No Babinski



Shows hypertrophic changes on the anterior margins of the bodies of the vertebrae in the upper dorsal region.

DOUBLE PUNCTURE

	Cistern	Lumbar
	Needle 80 mm. from table	Needle 80 mm. from table
Initial pressure	145 mm.	150 mm.
5 c.c. removed from cisterna	90 mm.	unchanged
5 c.c. removed from lumbar	unchanged	80 mm.
5 c.c. removed from cisterna	47 mm.	unchanged
5 c.c. removed from lumbar	unchanged	40 mm.
Jugular compression	100 mm. Rapid rise and fall	10 mm. Slow rise and fall
Cough oscillation	25 mm. Slow	40 mm. Rapid
Respiratory	5 mm. Slow	8 mm. Rapid
Pulse	2 mm. Rapid	Visible only
Fluid	clear	clear
Cells	2 lymphocytes	4 lymphocytes
Alcohol	0	+ + (heavy precipitate)
Ammonium sulphate	0	+ + (heavy ring)
Sulphosalicylic acid	31 mgm.	200 mgm.
Gold solution	0000000000	0000000000
Wassermann	negative	negative

A well marked block—not complete.

At a clinic demonstration June 26 Dr. Taylor found the clonus and reflexes as well as the spasticity greater on the right than on the left. There was evident sphincter disturbance, though of short duration. During the three days since admission there had been rapid progression of the spasticity.

June 28 operation was done. The patient made a very poor recovery from ether. After the operation he went into profound shock. That evening he died.

DISCUSSION

BY DR. W. JASON MIXTER

NOTES ON THE HISTORY

This illness of five years ago it seems to me is an important thing, because discharging glands in the neck and axillae for such a long period as that must be put down as probable tuberculosis. I cannot tell whether or not they have a bearing on the case until we go a little farther.

Darting pains running around the body, particularly on bending or jarring, may be important. Taken in conjunction with any other evidence of spinal or intraspinal lesion they are of distinct importance. Often such pain as that is the first symptom of spinal or intraspinal new growth. So we must definitely think of that pain in the region of the sixth or seventh ribs as a girdle pain or a pain caused by motion in the spinal column.

Here we have very definite evidence of paralysis coming on slowly, involving the legs and the lower part of the body without pain, with only tingling, burning, and numbness. Those two sensations of tingling and burning are so close to being pain at times that the differentiation is difficult. As a rule paralysis without pain must be put down to some degenerative process rather than to any new growth, although that is not always true. But I think pain is rather a common symptom in any case where there is a pressure lesion.

NOTES ON THE PHYSICAL EXAMINATION

From the description I should say that these scars are rather typical of tuberculous adenitis.

We do not need to take into consideration the fact that the nose was obstructed.

Large ragged tonsils would go more or less with the cervical adenitis.

"The whole tongue was quite thin." That is a very peculiar statement, a very peculiar sign to find in any case, I should think,—atrophy of the tongue, particularly of the outer border. Dr. Cabot, would you attach any significance to that?

Dr. R. C. Cabot: No, I should not. All I know of atrophy of the tongue is of the base behind, where it used to be associated with syphilis, I do not know whether rightly or not.

Dr. Mixter: "No tenderness over or displacement of any of the vertebrae." That is a very important observation and one which should be made in all cases of paralysis of this type, but which is often omitted. In going over a number of histories in this hospital last spring I found that description of the spine in tumors of the spinal cord was omitted in between twenty and twenty-five per cent. of the histories.

The heart and lungs I think do not come into the picture except that there are fine crepitant râles in the right apex, etc. It seems to me that here we have two possibilities, in the first place evidence of some change at the right apex, and also some evidence of a mediastinal growth or tumor,—perhaps we should say mediastinal tumor in its widest sense, meaning simply swelling.

Taken in connection with changes in the spinal cord causing paralysis and reflex changes without pain, nystagmus is often a fairly definite indication of multiple sclerosis. Having gone thus far in the case one would definitely think of multiple sclerosis from the fact that the patient showed nystagmus. Multiple sclerosis does not cause pain, and the whole picture would pretty well fit in with that disease so far as we have gone at the present time, or with some other degenerative lesion.

Absence of biceps and triceps does not mean much. Those reflexes are often absent. Absence of the abdominals and cremasterics is of definite importance.

In this description we have a fairly definite evidence of change or paralysis below some thoracic level, because both the abdominals and the cremasterics are absent. The absent skin reflexes and the increased tendon reflexes go together, placing the level of the lesion above the absent skin reflexes.

Now let us take up the diagram. It is a little difficult to tell here some of the sensory changes. We have diminished touch below about the level of the seventh dorsal on the left and the ninth dorsal on the right. Then farther down we have loss of touch and temperature sense; then on the scrotum we have hypersensitiveness, and on the legs rather bizarre changes in sensation, but going back always to a fairly definite level above which there is no change. I think that is the important thing when it comes to sensory examination,—the upper level of sensory change. If one can find increased sensitiveness, hyperesthesia at the upper level of sensory change, that is important. Apparently that was not present in this case. Curiously enough there was no Babinski. That is difficult to understand.

The non-protein nitrogen is not important.

Cistern and lumbar puncture combined are very important in this picture. They show a well marked though not a complete block, both from the dynamics and from the chemical changes. If we take the two columns and run them down we shall see very rapidly the differences, the drop in pressure on removal of fluid in one locus and not in the other, and the rapid rise in the cistern on jugular compression, the slow rise in the lumbar region, the differences in cough and respiratory oscillations, and also see that the protein present in the fluid is markedly increased in the lumbar region. The block is not complete, as shown by the slow rise and fall on jugular compression.

Dr. Cabot: What is that sulphosalicylic acid test?

Dr. Mixter: That is the quantitative determination of the protein contained in the cerebrospinal fluid.

X-ray is a very important thing in a case of this sort. We have presumptive evidence of tuberculosis in this patient, so naturally we want to find out whether he has a tuberculous lesion of the spine; also whether he has a definite change in the vertebral bodies from tumor. I think we might ask Dr. Merrill to say something about these x-ray plates if he will.

DR. MERRILL: As Dr. Mixter has said, this being a case in which tuberculosis was suspected the examination of the chest was important to confirm or rule out that question. We found nothing abnormal in the lung field. In the report of the skull I do not think that we ever used the word "tubercle." Anyway a small area of calcification that we see here is from the x-ray point of view normal in the pineal body. The skull I might say shows no other bone abnormalities. The interpreter speaks of hypertrophic changes in the bodies of the vertebrae. This man was rather young for hypertrophic changes of an arthritic nature, wasn't he, Dr. Cabot?

DR. CABOT: Surely.

DR. MERRILL: We see occasionally small proliferations in the margins of the vertebrae presumably of an infectious nature and when nothing else is found or suspected. We probably thought that those were similar things in this case. This plate should tell a different story. In the record mention is made of an examination of the chest,—"the hilus seemed enlarged posteriorly." I think this plate gives definite evidence why that enlargement was seen. This was taken by the well known Bucky diaphragm technique, which obliterates many of the shadows of the soft tissues so that the heart shadow is seen but vaguely, but within the heart shadow we see another area surrounding the spine from about the fifth vertebra down as far as the ninth, seen about equally on both sides and with distinctly greater density than the surrounding tissues on the remainder of the spine. We do not see any deformities, any irregularities of the outline of the bodies of these vertebrae or any evidence of displacement either in the antero-posterior or the lateral view. In disease of the bodies we expect to find some change in the structure or the outline or perhaps some displacement of the vertebrae as a result. In tuberculosis the intervertebral disc is almost invariably involved. Oftentimes the first thing we see and what we expect to see practically always in tuberculosis of the spine is change in the intervertebral space. This may be but is not enough marked to say positively because the spine would curve in that spot naturally and the spaces are not of equal width. This spine as a whole, not considering the shadow outside it, shows no abnormality. But I think the spindle shaped shadow showing outside the spine means something and I think the most likely thing is paravertebral abscess.

DIFFERENTIAL DIAGNOSIS

DR. MIXTER: I agree with Dr. Merrill on the importance of such a shadow as that. I think we must consider a Pott's abscess very strongly. It was evidently overlooked at the time that this examination was made. There is no mention of it either in the surgical notes or in the x-ray notes. That taken together with the presumptive history of tuberculosis would give us a very good reason for making a fairly positive diagnosis of tuberculosis of the spine.

In the absence of that evidence one would consider first intraspinal new-growth; secondly some change, some tumor in its widest sense, of the spine itself,—tumor in its widest sense to include an infectious process. We cannot bring our diagnosis down much more closely than that in such a case as this. In the series of tumor cases which we have had at this hospital in the last fifteen years—I think there have been some seventy of them—we have had I believe some twenty-five different pathological diagnoses: syphilis, tuberculosis, all kinds of tumors of the spine, of the membranes, of the cord itself and of the nerve roots, and also the congenital cystic lesions. So that cord tumor must be an indefinite diagnosis at best.

In view of the appearance of block and paralysis we have an absolute right to make a diagnosis of cord tumor, and with this x-ray we have a right to modify our diagnosis to probable tuberculous abscess, both intra- and para-spinal.

DR. CABOT: Was that the diagnosis in life?

DR. MIXTER: I do not know. I did not see the case.

DR. MELLA: Of course we thought of tuberculosis because of the enlarged glands in the neck. But the man did have nystagmus, absent abdominal reflexes, spasticity and ataxia with sphincteric disturbance, which all fits in with multiple sclerosis. We may have an acute multiple sclerosis in which the signs and symptoms come on within a month or two. In this case it seems as if the onset was extremely rapid for a tumor. The point against multiple sclerosis—though I do not see the note here—was that the man as I remember it did not have a paling of the temporal half of the optic disc. This is usually found in multiple sclerosis of that degree. The nystagmus was not so definite as usual in multiple sclerosis, and he did not have intention tremor in the arms. The sphincter disturbance was not incontinence; it was rather difficulty in starting. We thought of neurosyphilis. He had one pupil that was irregular, and the indications that one could see from the chart were of a diffuse rather than a localized lesion. I think there is nothing in that chart except the level of the loss of sensation in the thorax that points towards one definite lesion.

DR. MIXTER: There was block.

DR. MELLA: I was speaking about the examination of the patient before the double puncture. I do not think the level picture excludes multiple lesions. We may have two points of cord compression which I think may explain these findings.

Dr. Mixter: It does exclude multiple sclerosis.

Dr. Mella: It does that, but does not exclude two lesions. If we think in anatomical terms we cannot fit all these into one lesion. We should have to explain it, it seems to me, by two lesions. That was the confusing point. Those two lesions might be two abscesses or a specific affair. In favor of the latter is the irregular pupil.

DR. MIXTER'S PRE-OPERATIVE DIAGNOSIS

Tuberculosis of the spine.
Tuberculous abscesses.

PRE-OPERATIVE DIAGNOSIS

(From consultation:—Probably neoplasm of the spinal cord, sixth to eighth dorsal vertebrae.)

OPERATION

Gas-ether. Laminectomy was done from the fourth to the ninth dorsal vertebrae inclusive. There was excessive bleeding. The vertebrae did not appear abnormal. The arachnoid was found to be greatly thickened throughout the whole length exposed, and showed an extensive inflammatory process, probably tuberculosis. Within the area of exploration there was not found to be any portion of the cord severely pressed upon. It was not possible to explore higher on account of the rather poor condition of the patient, but it was evident clinically that there was no tumor present. Wound closed in layers.

PATHOLOGICAL REPORT

Microscopic examination of a small fragment shows fibrous tissue infiltrated with leucocytes and other wandering cells. The histologic appearances present a chronic inflammatory process.

H. F. Hartwell.

FURTHER DISCUSSION

Dr. Mixter: With the information we have, including the x-ray, I should certainly have expected to find a definite localized abscess at that level. The operator made a probable diagnosis of tuberculosis which is not borne out by the pathological examination. There was no localized pressure on the cord anywhere in the area explored. The exploration covered the area under suspicion and the most important focus, the upper level of sensory disturbance. So we must put this down as an inflammatory process, probably tuberculous, of a definitely diffuse type,—I should say diffuse arachnoiditis. With that finding at operation one would consider a diffuse tuberculous process, a diffuse syphilitic process, perhaps involving the whole length of the cord and the base of the brain. Such a process would explain the rather unusual neurological findings. The diagnosis of a diffuse process of that type is always difficult and I always hate to make it if I can make a diagnosis of any localized lesion. I think we can go no further except with Dr. Richardson's help.

Dr. Cabot: If you had seen that x-ray plate would you have done this operation?

Dr. Mixter: I think I should have. Even believing it to be tuberculosis I should have operated to try to relieve supposed pressure on the cord. I probably should not have opened the dura without first exploring the vertebral bodies extradurally, trying to get down into an abscess cavity. Because if we open the dura in the presence of tuberculosis about the dura we shall always lose our patient from tuberculous meningitis ultimately.

A Physician: Would those symptoms be probably due rather to a degenerative process? There is no evidence of definite pressure to produce them.

Dr. Mixter: None at operation. I still feel there must have been localized pressure somewhere on account of the evidence shown by the cerebrospinal fluid; or if not pressure, something blocking the cerebrospinal fluid, and the commonest cause is something pressing on the cord. So I should rather expect to find pressure somewhere even if I did not demonstrate it at operation.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Tuberculous meningitis.
Shock.
Hemorrhage.
Laminectomy for possible cord tumor.

DR. W. JASON MIXTER'S DIAGNOSIS

Tuberculous meningitis.
Tuberculosis of the spine.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Tuberculosis of the spinal column.
Compression and softening of the spinal cord.

2. *Secondary or terminal lesions*

Tuberculosis of the mesenteric, retroperitoneal and bronchial glands.
Slight status lymphaticus.
Laminectomy.
Soft hyperplastic spleen.

3. Historical landmarks

Old cicatrices of the neck.
Chronic pleuritis.

Dr. Richardson: There was a question whether this was tuberculous meningitis or not, but we were not allowed to examine the head.

On each side of the neck was an irregular row of old cicatrices extending down along the clavicles and along the region of the pectorals. They looked, as Dr. Mixter said, like old tuberculous scars.

The gastro-intestinal tract generally was out of the picture except for some hyperplasia of the solitary and agminated follicles of the intestine. This was associated with a small mass of thymus tissue—in other words, a slight status lymphaticus was present in this case. The mesenteric glands were more or less enlarged and showed frank caseous areas,—chronic tuberculosis. The retroperitoneal glands were not remarkable generally, but in the region of the lesser omentum there was an enlarged caseous gland.

There were a few old pleural adhesions on each side. The bronchial glands were slightly enlarged, with some caseous material in one of them. The lungs were negative, and all the evidence we found for tuberculosis was the old scars in the neck and the tuberculosis of the glands, mesenteric, retroperitoneal and bronchial, this associated with a slight status lymphaticus.

This brings us to the examination of the spinal cord, so far as we were permitted to do it. Between the levels of the bodies of the sixth and ninth thoracic vertebrae the anterior and lateral paravertebral tissues were thickened and appeared as a bulb-like mass in this region. Above the sixth the condition faded out rather gradually. Section of the lateral aspects of this bulb-like mass showed pale gray-red tissue mottled here and there with smaller and larger discrete and confluent areas of rather soft yellowish somewhat caseous-like necrosis. Parallel serial sections on the lateral aspects of the mass showed some slight erosion of the outer aspect of the bodies of the vertebrae. Beneath this the bodies were negative.

On the back of the body extending from the region of the fifth thoracic directly down the median line was the operation wound. The spinal cord was disclosed at the base of that. Extending the incision up to the region of the second thoracic disclosed in about the region of the second to the fourth a thick layer of grayish homogeneous tissue resting above the thickened dura of the cord in this region. The microscopical sections showed the process to be a tuberculous one.

Dr. Mixter: Did that depress the cord?

Dr. Richardson: Yes, it did. Section of the dura from the lumbar region upward showed a negative dura until the region of the second to the fourth thoracic was reached, where it was thickened as mentioned and apparently pressed on the cord in this region, and the cord showed irregular contours with flattening. The process in the posterior spinal column seemed to be in association with the one in the anterior. The spinal cord above was a little softer than usual, but in the region mentioned was softened and degenerated. The microscopical sections were confirmatory.

Dr. Mixter: May I add a word: The compressive lesions of the cord are found at or above the level where they are to be expected from examination, and seldom or never below. I say of the cord; that does not apply to the cauda equina. Here the lesion was above the explored level and could not be reached through this incision. We now know, having worked it out since this operation was done, that jugular compression can be tried with the patient on the table and the dura open, and can give us fairly definite evidence of block at that time. If we compress the jugulars with the dura open we get a rapid increase in the amount of the cerebrospinal fluid in the wound about the cord if there is free passage to the cranial cavity. If there is a block we get a slow increase or none at all in the pouring out of cerebrospinal fluid. That might or might not have given an indication in this case. On account of the poor condition of the patient it was not possible to explore higher. The operator evidently felt that the lesion was probably above, from his remarks.

Such a case is almost always fatal ultimately, and the relief given by surgical procedure is very slight.

Dr. Cabot: As I understand it, what we saw on the plate was not what caused the symptoms.

Dr. Mixter: No, that was outside.

Dr. Cabot: It was something higher up in the cord and separate from this, wasn't it?

Dr. Mixter: It was above the area shown in the plate. But the two processes go hand in hand,—the tuberculous exudate and the formation of new tissue outside and inside the vertebrae.

A Physician: Is it rather unusual to find so much tuberculous involvement without the bodies of the vertebrae being affected?

Dr. Mixter: Very. I do not think I have ever seen that before.

Dr. Merrill: No, that is a very unusual picture.

Dr. Mixter: A very unusual picture and very unusual findings post mortem in this case.

CASE 9463

An American book binder of forty entered August 6, 1923, complaining of diarrhea, bloody stools and loss of weight.

F. H. His father died of heart trouble, a grandmother of tuberculosis.

P. H. In 1919 he was ill in bed for three day with "grippe." For two years he had had a heavy sensation in the stomach region after some of his meals. About once a year he had spots in front of his eyes for fifteen or twenty minutes. Since the morning of admission he had had a buzzing in his ears and could not hear well; he felt as though his ears were stopped up. He had a cold at present. Ten years ago he had a similar attack and had his ears inflated at the Eye and Ear Infirmary.

P. I. For two years he had had attacks every month or two lasting perhaps a week in which he noticed some blood in his stools. Eight weeks ago he had a "home brew party." The following morning at two o'clock he vomited a pint or more of bitter vomitus. There was considerable straining. A day or two later he had an attack of diarrhea with blood and mucus, about ten movements a day. There was no pain except "gas pain." He kept at his work for four weeks. Then he consulted a physician, who ordered him to go to bed and gave him a diet of pepsin-milk, malted milk, etc. Three days ago his consultant recommended a more liberal diet of chicken, toast, mashed potato, and milk with lime water. During his stay in bed his stools had become somewhat less frequent and less bloody. He thought his condition had improved since he had taken solid food. He had lost probably ten or twelve pounds in the past eight weeks.

P. E. Weight 115½ pounds. Evidence of loss of weight. Depressed sternum. Pyorrhea. Tonsils red and injected. Pasty complexion. Some exophthalmos. Apex impulse of the *heart* not found. Sounds of fair quality. No enlargement to percussion. *B. P.* 120/65. *Lungs, abdomen, genitals, extremities, pupils* and *reflexes* normal.

Before operation *T.* 97.7°-100.4°, *P.* 71-100, *R.* normal; amount of *urine* not recorded, sp. gr. 1.015, cloudy at one of two examinations, alkaline at one; *blood*—hgb. 65 per cent., leucocytes 9,200, polynuclears 67 per cent., reds 4,032,000, some achromia and anisocytosis. *Non-protein nitrogen* 34.1 mgm. *Wassermann* negative. *Stools.* Guaiac positive at both of two examinations, very strongly at the second. *Proctoscopy* August 13. The rectum was intensely inflamed and covered with superficial ulceration. The slightest touch made it bleed. The rectum was narrowed to a diameter of 1½ inches. The valves of Houston were thickened and ulcerated. No large or deep ulcerations were found. *X-ray* of chest negative.

August 13 operation was done. The patient vomited frequently after it and had frequent discharges from the rectum. August 18 the stomach was washed. The following day he was given an enema. The vomiting became a little less. He complained of ringing in the ears which persisted after politzerization. The intake was restricted. He was given taps and opium. August 24 he became very weak and was given intravenous and subpectoral saline. Murphy drip through the distal end of the ileostomy was begun. The next morning he was better but slightly irrational (from champagne?) Opium and bismuth were omitted. August 25 the fluids were very low. He was given a Rehfuss tube, which he pulled out. August 28 he was taking fluids without vomiting, but was very drowsy and stuporous. August 31 x-ray showed the lower half of the left chest unusually bright. There were no visible lung markings in this region. Extending downward from the left root to the dome of the diaphragm there was a band of dullness which disappeared behind the heart shadow and which in its general shape suggested collapsed lower lobe. There was also fine mottled dullness extending outward from both lung roots. These changes were most marked at the right base. September 1 he became irrational. The temperature and pulse, which had risen constantly since August 28, reached 102° and 136 respectively, the respirations 57. That day he died.

DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

"A home-brew party" would start something in his intestinal tract if anything would.

Of course a diagnosis entirely on the basis of what we know so far cannot be made absolutely, but the possibilities are malignant disease, acute infectious colitis of the recurrent type, or chronic dysentery of some specific type which we have no reason to assume he has had—that is, amebic dysentery or dysentery of tuberculous origin. The differential between those has to be made by proctoscopy and a study of the stools. Proctoscopy is the main thing which gives a differential in these cases, because if it is malignant disease, if it is chronic diarrhea secondary to some of the acute infectious diseases, there will not be the picture of inflammation, redness and even small ulcerated areas that there is in acute infectious colitis. Here we have the picture of infectious colitis and do not require a bismuth x-ray to give any more help in the diagnosis.

Sometimes a colitis is associated with, perhaps secondary to, a diverticulitis. In either case the treatment is the same when the patient is at this stage of the game. It is a surgical disease. We have to do two things: (1) stop the fecal stream going over the ulcerated colon, and (2) give an opening through which irrigations of the colon can take place. In the mild cases appendicostomy is sufficient. That does not stop the fecal stream, but does allow of irrigation and has been successful. In the recurrent or more acute cases such as this gives evidence of being there is nothing short of ileostomy. Even a cecostomy cannot be done in such a fashion that all the material is short-circuited, although it gives a chance for irrigation.

Exploration should show a colon thickened from the rectum away around to the ileum, because the disease rarely stops short of the cecum and practically never goes above it. If the disease has not gone too far that will be enough. I do not see that we can make any other diagnosis than colitis.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Ulcerative colitis.

PRE-OPERATIVE DIAGNOSIS

Ulcerative colitis.

OPERATION

Gas-ether. Five inch median lower abdominal incision. The whole left colon and transverse colon were moderately narrow and much thickened and congested. The usual row of small glands beneath the colon was present. The right colon was thickened and reddened, but not so markedly as the left colon. There were areas in the cecum which were almost normal, other areas which were definitely thickened. A loop of ileum about eight inches from the ileocecal valve was brought out through a gridiron incision in the right lower quadrant. Fascia and skin sutured beneath the loop for an ileostomy.

DR. DANIEL FISKE JONES: I think you have covered the principal points, Dr. Young. There is one point which Dr. Young made which I should like to emphasize. A diagnosis of this condition can be made consistently *only* by proctoscopy. I say this so positively because I have seen several cases in which the diagnosis of colitis was made without the proctoscope by experienced gastro-enterologists in which the true diagnosis was carcinoma of the colon. These colitis cases are much more frequent than we used to suppose. At the present time they are coming in here pretty regularly, and I know that a good many are not getting in because I hear of them outside.

We call them infectious or ulcerative colitis because we think they are due to an infection and because it is an ulcerative colitis. But it is not an ulcerative colitis such as we read about in most of the textbooks. The textbooks give a picture of ulcerative colitis in which they speak of localized ulcerations here and there in the colon. That is not the case in this particular variety. Most of them are very superficial ulcerations which begin at the anus and continue around to the ileocecal valve. It causes a very marked thickening of the whole colon, and as the disease goes on a marked contraction of the colon. We have tried in every way possible to find the cause of this condition, but have been unable to up to the present time. All these cases are gone over very carefully, of course, for amebae and tuberculosis, but in these particular cases we do not find them. It is rather suggestive that many of them belong to tuberculous families, in the first place. In the second place we have had two cases in which the guinea pig showed tuberculosis after injection of material from the colon following the ileostomy. We have had two cases which began as perfectly typical cases of ulcerative colitis and very mild cases which ended in a tuberculous condition, at least clinically; that is, the usual ulcerations about the anus, ulcerations about a cecostomy which had been done, and perfectly typical lesions in the rectum. In both cases an acid fast bacillus was found in the discharge from the colon after an ileostomy. I merely throw this out as a suggestion that some of these at least may be tuberculous.

There is another thing which makes us think they may be tuberculous, and that is the fact that while we can cure a patient with an ileostomy in a fair proportion of cases, we have never yet, in this hospital at least, cured the condition in the colon except in the mild forms, for which an appendicostomy was done. That is, after doing the ileostomy the patients improve; many of them have gained forty or fifty pounds and are able to go about their work. They come back and tell us how well they are and ask us to close the ileostomy. But when we examine the rectum it is reddened, the ulcerations may not be quite so deep, but the ulcerative colitis is still present. We have attempted to connect up one case only. That was in a young boy who went three years and seemed so well that Dr. Hewes and I thought we might try to connect up the ileum. An end-to-end suture was done and the boy sent home. He did very well for a while, but at the end of six months the bleeding began all over again. So at the present time we feel that the condition is a pretty hopeless one so far as curing the disease is concerned. If we do a simple ileostomy these patients get along very well. If the surgeon attempts to do a colectomy in order to get rid of the disease the patient not infrequently dies.

Up to the present time we have done but

one. We were forced to do one case because of continued hemorrhage after an ileostomy. The patient was very ill and continued to go downhill. He went home for a short time and came in with a hemoglobin of twenty per cent. and I think a million and a half red cells. He was transfused twice, and the colon from the lower end of the sigmoid to the splenic flexure was removed at one sitting. We then waited a time and took out the rest of the colon to the ileocecal valve. In spite of that the patient went on, gaining very little for a time; then went downhill and died at the end of a year with only about eight inches of the rectum and the lower end of the sigmoid left.

The surgical treatment of these cases consists of either washing the colon or preventing the intestinal contents from going into the colon, and washing. That is, there are the two surgical procedures. The only surgical procedure that we ought to do for washing is an appendicostomy, if that is possible. A cecostomy may be done for the purpose of washing, but never for the purpose of preventing material from the intestine above going into the colon. It is almost impossible to do a cecostomy so as to prevent all the intestinal contents from going into the colon. Therefore if we want to wash the intestine only we should do an appendicostomy, and if that cannot be done, a cecostomy. Then if we want to do more we must do an ileostomy. That will prevent all the material from going into the colon and will give an opportunity to wash out the colon.

It is strange that in these cases washing out of the colon, while it would seem to be the logical procedure, does very well in some cases, but in other cases we find that the patient will go downhill just as long as we wash. Therefore we have to stop washing in some cases and leave the bowel at rest. Which ones we can wash and which ones we cannot we have to find out by experiment only.

Dr. Young: One question I should like to ask Dr. Jones. In the death of these patients after colectomy is there any suggestion of tuberculosis? Does that help any?

Dr. Jones: We have not had enough cases to find out. Glands have been taken out, sections have been taken out and tested, and we have found tuberculosis in only one case in the glands.

Dr. Young: Isn't it true also that in certain cases, as in this one, even the ileostomy fails to stop the progress of the disease?

Dr. Jones: Yes, this is a perfectly typical bad case of colitis. It looks as though the operation had something to do with this man's going downhill. Personally I think it had nothing to do with it. He simply could not stand the absorption of toxins he was getting from his whole colon, and died from the effects of that plus the effects of the bronchopneumonia.

Dr. Merrill: This x-ray plate was apparently the earliest examination and simply noted that the chest was negative. I see nothing of an abnormal nature, a few calcified glands, probably the results of an old tuberculosis of the glands.

The second plate was taken how long after operation?

Dr. Young: That was taken about eighteen days after the operation.

Dr. Merrill: I wonder if there were any signs of pulmonary complications immediately after the operation.

Dr. Jones: No, there were none.

Dr. Merrill: There is what appears to us a collapse of the left lower lobe. That is, although the patient breathed and some of the details are obscure, here there is a shadow extending from the lung root to the dome of the diaphragm which has all the appearance of a collapsed lower lobe, while between it and the chest wall and between it and the diaphragm there is an area where we see no lung markings, which suggests to us air in the cavity—that is, a partial pneumothorax with collapse of the lower lobe.

In the condition which is spoken of as massive collapse, post-operative, we find evidence of collapse of the lung with retraction of the heart toward the collapsed side, but without the presence of air in the pleural cavity. If this x-ray plate is true, where did the air come from? There are only two sources of which we really know,—from the perforation of a bronchus or through perforation from outside, which we often see after tapping. It would not be possible that air could come in through the subpectoral saline needle.

We have besides that signs on both sides which suggest an infectious process. As he vomited quite a good deal, it may have been aspirated material from the vomiting.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Miliary tuberculosis.
Ileostomy.
Ulcerative colitis.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Ulcerative colitis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Chronic ulcerative colitis.

2. *Secondary or terminal lesion*

Abscesses of the lungs.

3. *Historical landmarks*

Operation wounds.

DR. RICHARDSON: I had to make my examination through the surgeon's wound. The wounds were in pretty good condition. There was a slight infiltration of purulent material around the margin of the wound in one place.

The abdominal cavity was free from fluid, and was in good condition. The appendix was negative. A loop of the small intestine was sutured in the wall of the operation wound with an opening in it about twenty cm. above the ileocecal valve. So far as I could make out, in the pleural cavities there was no excess of fluid and only a few pleural adhesions. In several places there was a definite infection which had gone on to abscesses in the lungs, and that was as far as I could explore. Pieces of the lungs examined microscopically showed inflammation, no evidence of tuberculosis, and there was no evidence of tuberculosis in the bronchial glands. So that as far as the examination went there was no tuberculosis above the diaphragm or in the retroperitoneal and mesenteric glands.

The liver, adrenals, kidneys, bile ducts, pancreas, prostate, seminal vesicles, and testes were frankly negative.

That brings us to the large intestine, which was the seat of the trouble. This was a typical picture of the cases, as they come here, of chronic ulcerative colitis; that is, an intestine which usually from the cecum to the anus is the seat of innumerable losses of substance. These ulcers do not look like ordinary tuberculous ulcers. They present as innumerable smaller and larger discrete and confluent areas of denudation, as if the mucosa had been gouged off, leaving dirty red moist fairly smooth bases, at times with more or less necrosis which may in some cases go on to perforation, and the patient dies from peritonitis. In this particular case there was no evidence of perforation.

The cause of this, as Dr. Jones has said, we lay to some bacterial infection. It is quite impossible to isolate any particular organism from an intestine that is the seat of such marked chronic ulceration. In one or two cases of ulcerative colitis we have found tuberculosis in the wall of the intestine, so I think some of the cases may be tuberculous in origin, with additional infection with the other bacteria associated with the tubercle bacilli, which may cause the greater part of the lesion found. But there is a definite group where the intestine is the seat of ulceration which has not the characteristics of tuberculous ulceration or of amebic or any of the other typical ulcerations. One case here was watched for ten years off and on and finally came to necropsy. The death in this case was due to peritonitis following perforation.

ERRATUM

IN CASE 9433, published October 25, the reproduction of the x-ray plate on page 603 was reversed.

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REPAIR OF THE COMMON BILE DUCT

MCARTHUR, L. L. (*Annals of Surgery*, August, 1923), in his presidential address before the American Surgical Association in May, 1923, speaks in great detail of the operative repair of the common bile duct and believes that the method of using small rubber catheters inserted into the duct is the best technic possible. He has advised a slight variation whereby the catheter in the duodenum is hitched to the abdominal wall by sutures which later can be cut, releasing it and allowing it to pass out through the intestines. This procedure has been very successful and apparent cures have resulted. [E. H. R.]

SURGERY OF THE THYROID AND ITS MORTALITY

MAYO, C. H., and PEMBERTON, J. DEJ. (*Annals of Surgery*, August, 1923), write as follows:

1. In order to evaluate accurately statistics on the results of operations on patients with goiter, the knowledge of two facts is essential, the proportion of goiters without hyperthyroidism included in the computation, and the basis on which operative mortality is reckoned.
2. The operative risk in cases of goiter without hyperthyroidism cannot be compared with that of goiter with hyperthyroidism; in the former the dangers are confined to the operative and post-operative accidents; in the latter the greatest danger lies in the disease itself.
3. The reduction of the mortality to 1 per cent. in surgery of exophthalmic goiter is attributable to three factors: (*a*) patients with exophthalmic goiter are coming to operation earlier in the course of the disease, before the development of visceral degenerative changes, (*b*) by the combined medical and surgical management, the development of post-operative acute hyperthyroidism has been reduced to a minimum, and (*c*) a clearer recognition of the dangers involved in the injury of the recurrent laryngeal nerve has led the surgeon to greater care in its avoidance.
4. The combined medical and surgical management of patients with exophthalmic goiter is warranted from the economic standpoint, as it has reduced the necessity for ligations.
5. As preliminary measures are ineffectual in adenomatous goiter with hyperthyroidism, the mortality rate is dependent on the number of bad risk patients accepted for operation. [E. H. R.]

THE BOSTON
Medical and Surgical Journal
Established in 1828

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Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the printer with galley proof of paper. Upon written request, authors will be furnished free one hundred eight-page reprints, without covers, or the equivalent in pages in articles of greater length.

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Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass.

THE THORNDIKE MEMORIAL LABORATORY

THE formal opening of the Thorndike Memorial Laboratory is of local interest as it marks a notable step in the development of the hospitals of Boston, but the establishment of the Laboratory has a much more far-reaching significance in the fact that it constitutes a definite recognition of the value of medical research to a municipal hospital.

By the terms of the will of the late Mr. George L. Thorndike, whose brother, Dr. William H. Thorndike, was for many years an eminent member of the surgical staff of the Boston City Hospital, the residuary estate was to be held until it had accumulated to the sum of two hundred thousand dollars, when it was to be given to the Trustees of the Boston City Hospital for the construction of a building which should be equipped and subsequently supported by the Municipality. After due consideration of the problem and its possibilities the Trustees decided that the welfare of their institution would be best served by a building which would provide space for a thoroughly modern x-ray department and at the same time give opportunities for carrying on research in the various branches of Clinical Medicine. The recently completed building testifies to the success with which those objects have been carried out. The basement and ground floor contain ample space for the x-ray examination and treatment of patients from the House and Out-Patient Departments, and the complete installation of new equipment makes this division, which has been suffering from limited space and imperfect apparatus, unsurpassed in its possibilities.

The three upper floors are devoted to research. One of these is a ward for about twenty patients who will be in small rooms holding from one to six beds, and above it are two floors of laboratories equipped for general and physical chemistry, physiology, and bacteriology. The work in this department will be carried out in part by paid men, who are devoting themselves largely to research, and in part by clinical members of the Hospital Staff, who desire to give a limited amount of time to the investigation of special problems. The establishment of this unit as an integral part of a great general hospital with its enormous reservoir of clinical material of almost every conceivable type makes an ideal opportunity for the study of disease, and the installation of the research division in the very midst of the hospital ensures an intimate relationship between the research service and the general services which will work to the benefit of both. The investigators in the Thorndike Laboratory cannot remain remote or isolated from the problems of medical practice, for these problems must press upon them owing to the very propinquity of the general wards; the physicians and surgeons in charge of the wards, on the other hand, cannot fail to be stimulated and benefited by the researches which are undertaken in the laboratory.

Although it may be hoped that important advances in medical science will come from the Thorndike Memorial Laboratory, experience in other hospitals has shown that quite apart from new discoveries, the presence of a group of scientific workers exerts a very desirable effect on the professional work of the institution as a whole. Not only the development of original methods of diagnosis and treatment, but also the testing, controlling and critical estimation of the value of methods suggested in other parts of the world often require special training and more time than most clinicians have at their disposal. The presence of a group of specialists, therefore, who can help to devise new means of solving clinical problems and who can advise as to the practical significance of advances made elsewhere cannot fail to be of value to the Hospital Staff, and, indeed, to the practicing physicians of the community. It is undoubtedly this relationship and its effect in promoting the better care of the sick in Boston, which the trustees had in mind when they were far-sighted enough to provide in so liberal a manner for clinical research. No other municipal hospital in this country has as yet taken so definite a forward step, and it may be expected that many will watch this development with interest and follow the lead of the Boston City Hospital.

FRIENDS OF MEDICAL PROGRESS

THERE are many individuals, the world over, with more energy than common sense, who have mistaken soft-headedness for soft-heartedness. Impelled by the same common desire to end all suffering at one stroke, like cutting a Gordian knot, without inquiring into the causes of it, they have flocked into the ranks of the Medical Liberty Leagues, the Anti-Vaccination Societies, the Anti-Vivisection Societies, etc. Having more time to spare than the orthodox scientists and professional men; being more intent on their one task; with the enthusiasm that is born of a single idea, they have plumbed the depths of modern efficiency and organized themselves.

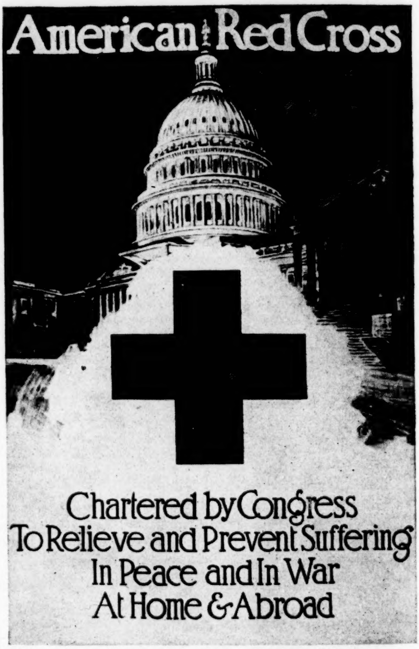
Organization gives the added force of direction to desire. Many individual efforts directed together in a wrong cause may prove more powerful than a disorganized, though righteous, opposition. Our opposition has been disorganized, and we have barely saved ourselves from defeat on more than one occasion.

We have at last, however, recognized that a determined effort against us must be met with a determined effort in response. The safeguarding of the public health is in our hands, and to spare any effort to combat the attempts being made to undermine the public confidence would be to betray our trust. It is worthy of note that the first organized step to justify modern scientific methods of medical practice has been taken by the so-called laity. The Friends of Medical Progress, a society formed in Boston to further the cause of legitimate animal experimentation, to spread the knowledge of justifiable medical procedures, and to combat the attempts of many misguided individuals to destroy the confidence that the public has placed in us, is headed by laymen, and is composed largely of persons who are not physicians. Dr. Charles W. Eliot, believing in this necessary propaganda, has lent his name as Honorary President. The Acting President is Mr. Thomas Barbour of the Agassiz Museum, a naturalist; Mr. Ernest Harold Baynes is Field Secretary; and Dr. James R. Angell, President of Yale University, Hon. Charles E. Hughes, and Cardinal O'Connell are among the officers.

We may expect strong support from the Society; we must expect strong support from it, for it has taken up the torch that we have held too feebly to light the way of a truth-seeking public; but a public too often led astray by the will-o'-the-wisp of "medical liberty."

RED CROSS POPULAR HEALTH INSTRUCTION

WHILE the American Red Cross stands in time of war or disaster as a universally supported and efficiently organized friend of all who suffer, in time of peace the society stands as a great teacher, which through four educational courses to men, women and children, offers instruction of practical, worth-while value in the pursuance of everyday life. These courses are now known as Home Hygiene and Care of the Sick, Food Selection, First Aid and Life-Saving.



1923 ROLL CALL NOW IN PROGRESS

The course in Home Hygiene and Care of the Sick had its origin in 1908, when the District of Columbia Chapter initiated a class in Home Nursing for women and girls. Following the affiliation of the American Nurses' Association with the Red Cross in 1909, this instruction was greatly expanded and developed and in 1913 the Red Cross published the textbook which has since become the basis for these classes. This textbook has since been translated in whole into the Polish and Czecho-Slovakian languages and in part into the Japanese, Russian and Korean languages and in addition has served as a guide to the group instruction which

American Red Cross nurses have offered to women and girls in practically every country in Europe and Asia where the American society has sent its war relief commissions.

Classes in Home Hygiene and Care of the Sick may be formed by Red Cross Chapters, schools, clubs, churches and other organizations. An authorized Red Cross nurse gives the instruction through demonstrations interwoven with theory and the pupils then practice what she has shown them. The aim of the course is two-fold; first that women and girls may learn the elementary principles of nursing, personal hygiene and household sanitation in such a way that in time of national epidemic when a shortage of professional nurses may result, or in the minor illnesses which occur in every home, they will be able to nurse their sick. The second aim of the course is that women and girls may assist in checking infant and child mortality by learning how to care efficiently for babies and young children and may further adult efficiency by knowing how to care for minor infectious diseases. Since 1914, over 304,000 women and girls have received certificates for having satisfactorily completed this course.

The Red Cross course in Food Selection aims to teach to housewives the principles of correct feeding and wise buying. Classes may be formed by Chapters, clubs, factories and other organizations. The instruction is given by qualified Red Cross nutrition workers and embraces a study of foods and the factors that must be considered in choosing an adequate diet for the well and the sick. Like the course in Home Hygiene, this course had its first beginnings in 1908, when class instruction for women and girls "in dietetics and household economy" was authorized.

The ideal of preparedness is one which is inseparable to that of the Red Cross. Many a victim of accident has died before a doctor could arrive, yet about him have stood numerous persons whose efforts might possibly have saved his life, had they only known what should be done. Hence, the ability to offer expert assistance to the victims of accident may be regarded as a worthy expression of the Red Cross ideal of preparedness and for this reason the organization now conducts class instruction in First Aid and Life Saving.

The instruction in First Aid had its commencement in 1910. Two years before, however, Miss Boardman happened to witness a First Aid contest which was being conducted by miners, and was immediately struck by the realization that here was a fertile field for Red Cross endeavor in time of peace. She then prevailed upon the Red Cross Central Committee to adopt this as a continuing peace activity of the Red Cross and the Surgeon General of the Army subsequently detailed Colonel Charles Lynch, Medical Corps, to National Headquarters to develop the service. Colonel Lynch wrote and published in 1910 the textbook, *First Aid to the Injured,* which has since become the basis for subsequent work on this subject.

Red Cross First Aid instruction is now given, in varying degrees of complexity, to groups of men and women, boys and girls. The instruction covers a period of ten lessons and the subject matter consists in general of the treatment of poisoning, sun-stroke, fainting, bruises, sprains and fractures, burns and shock, hemorrhage and the proper covering of wounds; artificial respiration and the proper transportation of the severely wounded. The lessons are conducted by local physicians and by special Red Cross field representatives who are physicians possessing special aptitude and training as instructors in Red Cross First Aid. To railroad men, the Red Cross offers this instruction by means of a Red Cross First Aid car which is carried free of charge over the railroad systems. Two physicians are on duty in this car and have charge of the organization and instruction of classes. The car is equipped with teaching apparatus, class-room and living quarters for the staff. A special railroad edition of the textbook has been prepared to facilitate instruction to this group of men. For other groups of workers, the subject matter of the course has also been particularized, for the textbook is now published in an industrial, a firemen's, a woman's and a general edition.

Red Cross "water First Aid" is known as Life-Saving, and those who have satisfactorily passed certain tests as Red Cross Life-Savers. The aim of this instruction is to develop public sentiment and provide facilities and personnel for safeguarding human life from drowning. The Red Cross Life-Saving Corps now consists of over 29,000 trained volunteer swimmers who are pledged and competent to go to the rescue of all whom they may see in distress in the water. Often these Life-Savers, organized in connection with local Red Cross Chapters, patrol unprotected water-fronts in their communities, on the outlook for swimmers in danger in the water.

To become a Red Cross Life-Saver, a swimmer must demonstrate before an accredited committee his or her ability to enter the water from a standing position or in a running dive; to swim one hundred yards, using three strokes; to tread water; to dive and recover objects; to float; to approach from the front, rear or under water an apparently drowning person, break his holds, keep him afloat while towing him ashore; and administer the Prone Pressure method of artificial respiration and, if necessary, First Aid.

Such, in brief, are the Red Cross courses which strive to teach to the laity simple, yet beneficent principles and methods of bettering individual and community health and of giving aid in time of accident. These efforts alone earn for the Red Cross the interest and support of physicians during the Red Cross Roll Call, to be held this year between Armistice Day and Thanksgiving, November 11th-29th.

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THE *SCIENTIFIC AMERICAN* AND E. R. A.

A public service of great value will be rendered by the *Scientific American* through its investigation of electronic medicine. No matter how impartially such researches are carried out by members of the medical profession, a portion of the public and the sect investigated will always respond with accusations of unfairness, prejudice and professional jealousy.

The findings of a committee such as the *Scientific American* has gathered together are bound to carry weight with all intelligent readers. This committee, as it stands at present, consists of an engineer, a bacteriologist of the Department of Health, City of New York, and two members of the editorial staff of the magazine.

The first report of this committee, written by Mr. Lescarboura, the managing editor of the *Scientific American,* and appearing in the November issue, is evidence of the impartial and yet scientifically critical attitude of the committee. Six test tubes containing pure cultures of (1) typhoid bacilli, (2) pneumococci, (3) colon bacilli, (4) tetanus bacilli, (5) tubercle bacilli, and (6) diphtheria bacilli, were submitted for examination. The report of the electronic diagnosis is worth reproduction. (The amount of each disease present is stated in ohms.)

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Acquired Syphilis	26	..	66	..	..	..
Congenital Syphilis	146	49	27	..	+	148
Tuberculosis	7	6	7	+	+	3
Gonorrheal Infection	38	39	16	..	+	200+
Streptococcus (Pneumococcus)	153	..	49	..	+	87
Malaria	59	17	17	39	+	23
Typhoid	..	..	..	..	..	..
Influenza	210+	36	46	22	+	..
Colon Septicaemia	..	53	9	22	+	63
Diphtheria	Not tested.			3	Not tested.	
Tetanus	Not tested.			..	Not tested.	

Mr. Lescarboura's description of the session during which these tests were made is strongly reminiscent of investigations made in Boston last year. We meet the same pseudo-scientific patter and "business," the same vagueness of results, the same excuses for failures. The Dr. X of the *Scientific American* investigation attributed his failures to several causes. First, the labels upon the tubes had red lines. Second, the writing upon the label, consisting of a single numeral, was accused of bearing within itself the radioactivity of the person who wrote it, this radioactivity being powerful enough to overcome the special "vibratory rate" of the pure cultures within the tube. If these two reasons were not sufficient to excuse the failure, a third was brought forward—the bacteria from which the cultures were started came originally from human beings, and transmitted the radioactivity of the individual from whom they were obtained! This might almost be called a "reductio ad absurdum."

And after all, the committee received a letter from Dr. Abrams, in which he stated that "Dr. X" was not an accredited representative of E. R. A. Naturally not, for if he had been, he would not have consented to carry out the above-described experiments. The first qualification of a practitioner of electronic medicine is to avoid such tests.

We shall look forward with interest to the next report of the *Scientific American* committee.

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DIPLOMA MILL DOCTORS IN CONNECTICUT

Further revelations of the diploma frauds as unearthed by the St. Louis *Star* show that Connecticut registered and admitted to practice some of the persons who had procured bogus diplomas. The St. Louis *Star* published on November 1, 1923, a confession submitted by George Sutcliffe to the Governor of Connecticut, setting forth that a member of the Eclectic Medical Society of Connecticut offered to get him a license for $100, and that after paying the money to this man the license was mailed to him (Sutcliffe).

Sutcliffe is reported to have said that he worked for two years as secretary to Dr. Briggs of the St. Louis College of Physicians and Surgeons, and that on numerous occasions he falsified the records of the St. Louis College of Physicians and Surgeons under the direction of Briggs, and, further, that Briggs had sold blank diplomas. Sutcliffe alleges in the confession that there are many men practicing medicine in Connecticut holding diplomas from the St. Louis College of Physicians and Surgeons. The fraudulent practices in Connecticut are to be prosecuted by William F. Bates. Connecticut has more than one medical licensing board, and the board representing the regular profession is not involved in the scandal.

Massachusetts has had only one medical registration board, for it has been the policy of the State to adhere to a single standard, but under our very inadequate law any graduate of a medical school which gives a four years' course may apply for registration. Very few from the St. Louis College have succeeded in passing the Massachusetts board. These revelations may induce the Legislature to accede to the wishes of her prominent physicians and enact a law which will take this State out of the list of the few which are open to graduates of low-grade schools. There are now very few low-grade medical schools in this country, but they will continue to exist so long as opportunities for recognition exist.

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FIRST HEALTH WEEK CONFERENCE

The first session in the health week conferences was held at City Hall on October 31, a number of delegates of the City Federation of Women's Clubs assembling in the council chamber at 10 o'clock in the morning. Mayor Curley made the welcoming address, and Health Commissioner Francis X. Mahoney and Stephen L. Maloney, secretary of the department, discussed its activities. In the afternoon a session was held at the Bussey Institution with an address by Dr. Eugene R. Kelley, health commissioner of the State, and the work of the State Antitoxin and Vaccine Laboratory was explained by Dr. Benjamin White, the director.

Mr. Maloney gave an interesting account of the history of the development of health work in Boston, one of the pioneer communities to give attention to the prevention and control of disease. Among the famous individuals interested in this early development was Samuel Fuller, Governor Winslow, Captain Robert Keayne, Rev. Cotton Mather, and Paul Revere. Paul Revere was president of Boston's first Board of Health. By the farsightedness of these men legislation was secured, much of which remains on our statute-books, and all of which laid a firm foundation on which the present structure was built.

"Boston was the first city," said Secretary Maloney, "to establish in this country or abroad a system of daily medical inspection of children in all public schools." This inspection was started in 1890, but was not officially begun until 1894. The work has since been transferred from the Health Department to the School Committee, and is now under the direction of Dr. William H. Devine.

Taking up each division in turn, Secretary Maloney explained what is being done to safeguard the health of the community, with an appropriation of $535,836 last year.

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THE EXAMINATION OF CRIMINALS

The Massachusetts Civic League has prepared a petition which will be presented to the Legislature and which provides for the mental and physical examination of convicted prisoners in our county jails and for their specialized treatment. This bill has been endorsed by the executive committee of the Massachusetts Society for Mental Hygiene and physicians who comprise the Boston Society for Psychiatry and Neurology.

Last year there were 9219 confined in county jails and houses of correction in Massachusetts, and more than half of this number had served an average of six previous sentences. It is believed that more than 50 per cent. of these malefactors are suffering from some recognized type of mental impairment. It is neither human nor expedient to allow these habitual perverts to repeat the acts for which they are repeatedly confined. It is possible that indifference to the proper study of the criminal is responsible for serious dangers to society and a financial burden on the State. Prevention of crime and control of the perpetrators are economic as well as humanitarian problems. The proposed law should be enacted. Misapplied sympathy and indifference should be overcome by rational effort.

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A PROPER REGULATION

The Essex North District Medical Society several years ago adopted the following resolutions:

Whereas, the publication in the daily press of physicians' names in connection with their cases, operations, and professional work, or the suffering of such publication to be made, is contrary to the Ethics of the American Medical Association, and the Massachusetts Medical Society, and is opposed to the best interests of honorable medicine and the public good; be it

Resolved, that the Essex North District Medical Society in session assembled, and the Medical profession in sympathy with it, declare that such publication is against their wishes;

Resolved, that it is the duty of each physician to prevent the appearance of his name in such connection;

Resolved, that the publishers of the press are respectfully requested to omit such mention entirely;

Resolved, that a copy of these Resolutions be sent to each physician in the district, to the secretaries of the Massachusetts state and district societies, to the publishers of papers circulated in this district, and to the American Medical Association, for publication.

These resolutions definitely meet the objections to a practice which tends to discredit the standing of physicians. Fortunately most doctors have enough pride and common sense to deter one from encouraging or even voluntarily accepting this class of free advertising.

Newspapers sometimes publish references to physicians which warrant the suspicion that the items are inspired. If a doctor wants and encourages this sort of advertising without assuming responsibility therefor he is clearly violating the ethical standards of the profession and should be made aware of his compromising behavior. Whenever publicity relating to a doctor's work is open to suspicion the officers of the Society to which such doctor belongs may properly call for an explanation, and if the practice is continued, appropriate action may be in order.

It is fully recognized that great discoveries pertaining to medicine must be given due publicity, but publicity of individual comparatively routine practice should only appear in medical journals where the value may be appraised by those who are competent to pass on such reports.

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NEW YORK WILL PROSECUTE QUACKS

Through the influence of Mr. R. B. Dawson, counsel of the Medical Society of the County of New York, District Attorney Banton has delegated Mr. James J. Wilson, one of the assistants in the district attorney's office, to the work of prosecuting quacks in that county. This is a move in the right direction for it means that the people in that county will, through their legal representatives, seek protection from impostors.

Hitherto much of this work in most states has fallen on the Boards of Medical Registration. This work is disagreeable and should be carried on by the regular legal machinery of the State. The effect of these activities will be salutary and will tend to dissipate the suspicion that the medical profession has been actuated by selfish motives.

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Miscellany

THE NUTRITION PROGRAM*

Six years ago at a conference held at the Little Wanderers' Home in this city a nutrition program was presented as a result of work carried on since 1908 in clinics, schools, and institutions for the care of children. The present occasion offers an opportunity to report what progress has been made since that time on the basis of the program then proposed.

There has been extension of the work with small and large groups in Boston and elsewhere. In February, 1918, a demonstration was begun at Public School 64 in New York City in charge of the Bureau of Educational Experiments. Work was also undertaken as consultant for the Elizabeth McCormick Memorial Fund of Chicago, which is concerned not only with health activities in that city but with work of this kind throughout the West.

The need for trained workers led to the holding of nutrition institutes. At first these were carried on in Boston, but it was soon apparent that the most effective plan would be to carry the institutes into the cities in which the program was to be used in a local or state-wide campaign. Two weeks of intensive work equivalent to a college course of one period a week for one semester and two periods a week for a second semester are given. These have been attended by physicians, nurses, teachers, social workers, and other experienced persons, over 2000 of whom have now been given this training in 34 institutes held in 22 cities in 16 states. The programs of which these have been a part have involved the coöperation of state and city boards of education and health, chambers of commerce, Rotary and other clubs, as well as of all the various child-helping organizations at work in the particular field.

Weighing and measuring has been an essential part of the program. In one city 10,000 children were weighed and measured in order to identify the malnourished children. In another the number was 20,000, elsewhere 28,000, 35,000, 70,000, etc. Nutrition classes have been organized to care for these cases. In one city 1500 children are at all times during the school year in these classes, and there are waiting lists from which new members are taken as fast as children "graduate" by coming up to the average weight line. Records show that from 60 to 70 per cent. of these graduates are still holding their own, sixteen months after they first began to work on the nutrition program.

Physical growth examinations are given to all members of these classes, and care is provided to bring them to a condition of being "free to gain," so that they can be made well in their own homes. Nutrition or Diagnostic Clinics are established for the treatment of the more difficult and obscure cases. Special camps or stations are provided for children requiring full control for a period of time. A group of 27 children made an average of 1400 per cent. of the growth expected of children of their ages during the period of treatment. In Denver this particular work is financed by the Junior League.

The geographical range of the work has been from Labrador, where Dr. Grenfell has organized a special division of child welfare to carry out the nutrition program, to the Hawaiian Islands, where the territorial Legislature has made a grant to care for the situation until the Department of Education has funds available for this purpose.

The program has proved effective alike in public, private, and parochial schools.

During the past year some 25,000 pamphlets, reprints of articles, etc., and 85,000 weight charts, physical-growth examinations, and other forms were sent out from the Boston office, while large quantities of these are printed at other large centers for distribution in more remote districts. In a single year the total circulation of all material issued amounted to more than 30,000,000 copies. This included a series of articles intended especially to reach mothers and published in a popular journal. In this series medical material with medical charts have proved to have sufficient interest to be now running in the fourth year.

Growing interest in nutrition work is evident on all sides. At a recent meeting of public health and physical education workers, a marked change from former programs was evident in the attention given to this subject. Nutrition work is especially the field of the pediatrician. The osteopath and the chiropractor are turning to the problems, and in the medical group tuberculosis and public health experts are devoting themselves to it. The nutrition class and the nutrition clinic call for the best diagnostic work available. The problem is primarily that of the pediatrician, and by use of the nutrition program and the class method he can extend his range and greatly increase his efficiency.

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*Report of an address made by Dr. William R. P. Emerson before the combined meeting of the New England Pediatric Society, Philadelphia Pediatric Society, and Pediatric Section of the New York Academy of Medicine on Oct. 20, 1923.

THE TREVETHIN REPORT

The *British Medical Journal* of July 21 gives an account of the fourth annual meeting of the Society for the Prevention of Venereal Disease, at which a resolution was adopted accepting the report of the committee of inquiry on venereal disease, of which Lord Trevethin was chairman. The entire report was published in the July number of Venereal Disease Information.

Lord Willoughby de Broke, the president, gave an address pointing out that the Trevethin report amounted to a complete vindication and indorsement of the society's policy, and proposed the following resolution:

That the Society for the Prevention of Venereal Disease accept the Trevethin report as a document supporting the six essentials of the policy of the society, namely, that:

1. A man who after exposure is properly and thoroughly disinfected by disinfectants of appropriate nature and strength runs little risk of infection.
2. An intelligent man if furnished with reasonable instructions can, in favorable conditions, effectively disinfect himself.
3. The adoption of skilled disinfection (in disinfecting centers) is not to be recommended as part of any general system, for reasons of time, cost, and impracticability.
4. The instruction by medical officers of venereal disease clinics of male persons attending such clinics, in the preventive use of disinfectants, offers a useful means of educating the community.
5. There is no evidence of facts in support of the view that any system of disinfection would tend to increase the number of exposures and raise the disease rate.
6. The law should be altered so as to permit properly qualified chemists to sell *ad hoc* disinfectants, provided such disinfectants are sold in a form approved and with instructions for use approved by some competent authority.

And also in view of the unqualified acceptance of the Trevethin report by the National Council for Combating Venereal Diseases, that the Society for the Prevention of Venereal Disease is prepared to form a joint committee with the National Council for Combating Venereal Diseases under the chairmanship of Lord Dawson, of Penn, to watch and further the policy based on the terms of the Trevethin report.

Dr. J. H. Sequeira, in seconding the resolution, said that as one who had served on the Trevethin committee he had been struck by the unanimity of the evidence in favor of immediate self-disinfection, which had greatly impressed the committee as a whole. Lady Asquith, chairman of the women's committee, in supporting the resolution said that she looked upon that day as the greatest in the society's existence, and considered that the Trevethin report offered great hopes that at last something would be done for the protection of the health of women and children. Mr. Basil Peto, M. P., urged that immediate steps be taken so as to insure that the necessary bill to amend the venereal diseases act, 1917, should be presented in the autumn session. Mr. Frank Souter said he had just returned from a visit to the Far East, where branches of the society had been established, with the result that venereal disease had been greatly reduced, to the immense benefit of local production and trade.

The resolution was carried unanimously.

The honorary secretary, Mr. H. Wansey Bayly, in presenting the annual report, stated that opposition to the society's policy was now based not on the society's published policy but on a misunderstanding and consequent misrepresentation of such policy by certain persons, the most prominent being Lord Astor, who was chairman of the interdepartmental committee whose unsatisfactory report was the reason of the society's foundation. He considered that as the National Council for Combating Venereal Diseases and the Society for the Prevention of Venereal Disease had both unconditionally accepted the Trevethin report, the only logical sequel was cordial coöperation between the two societies to press forward the carrying into effect of the recommendations contained in the Trevethin report.

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CARBON-MONOXIDE HAZARDS FROM TOBACCO SMOKE

JONES, GANT AND BERGER summarize their experiments along this line as follows:

1. Previous investigators have shown that undiluted tobacco smoke contains CO in widely varying quantities (0.5 to 8.0 per cent.) depending upon the form and manner in which it is smoked. However, the correlation of the values reported from conditions in closed spaces where people might be assembled are difficult, if not impossible.
2. Tests were made to determine how much CO is present, and the amount of absorption of CO by occupants in non-ventilated room in which different kinds of tobacco smoke was liberated by smoking, the amount liberated in each case being many times greater than would ever be tolerated in a room in which people might assemble.
3. Tests were made with cigar, cigarette, stogie, and pipe tobacco. Three or more subjects remained in a closed non-ventilated room of approximately 1000 cu. ft. capacity, and smoked continually during the entire test period of 1½ to 2 hours. Samples of the room atmosphere were taken at intervals and analyzed for carbon monoxide, carbon dioxide, and oxygen content; while blood samples were taken from the subjects at the end of each test for percentage CO saturation of the blood. In every test the smoke became very uncomfortable in 15 minutes, and in from 45 to 60 minutes it became necessary to wear goggles to prevent eye irritation. In other words, each test was continued until the smoke was from four to six times more concentrated than would be permitted under ventilated conditions. The highest percentages of CO present at the end of any of the tests were never greater than 0.02 per cent., and the percentage CO saturation of the blood of the subjects was not greater than 5 per cent. even in the case of two subjects who inhaled 20 cigarettes each during the 1½ hour test period.
4. Tests were made to determine why a smoker, especially one who inhales, does not absorb more carbon monoxide into his blood. These tests showed that concentrated smoke does not reach the alveoli of the lungs, and that the maximum average concentration of CO drawn into the lungs, even if the inhaled smoke was thoroughly diffused throughout the inhaled air, would not be greater than about 0.01 per cent. This amount is no higher than may be present on the streets of some of our larger cities where automobile traffic is heavy.—Reports of Investigations, Department of the Interior, Bureau of Mines.

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JOINT MEETING OF THE BARNSTABLE, PLYMOUTH, BRISTOL NORTH AND SOUTH DISTRICT MEDICAL SOCIETIES

On Thursday, November 8th, there was a joint meeting of the Barnstable, Plymouth, Bristol North and South District Societies at the Lakeville State Sanatorium.

After dinner the following papers were read:

Dr. Walter P. Bowers: The Work of the State Society.

Dr. Bernard W. Carey: The State Board of Health Tubercular Clinics, especially in regard to children.

Dr. Henry D. Chadwick: The Diagnosis of Juvenile Tuberculosis. This was illustrated by x-rays.

Dr. Joseph Garland: Milk-Borne Diseases and Their Prevention.

Dr. Sumner Coolidge presided. There were about one hundred and thirty-five physicians present.

JOSEPH L. MURPHY,
Secretary, Bristol North.

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SPECIAL SERVICE FOR ORTHOPEDIC CASES IN BUFFALO, N. Y.

THE Mayor of Buffalo has solicited the assistance of Dr. Adolph Lorenz for the purpose of giving "counsel and possible relief" to orthopedic cases in that city. It is reported that 1672 persons applied for the services of Dr. Lorenz. Only 447 applicants were examined and 22 operations performed. The question comes to mind whether among the skilled orthopedic surgeons of New York one might be found who would have responded to an invitation of the Mayor.

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INSTRUCTION BY RADIO

THE American Society for the Control of Cancer reports that the programs of the Society as broadcasted from the N. Y. Telephone Company's Station are heard by six hundred thousand persons.

The talk by George A. Soper, Ph.D., Managing

Director, under the title "Are You an Ostrich?" has been favorably received.

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LYNN MEDICAL FRATERNITY

A REGULAR meeting of the Lynn Medical Fraternity was held at Smith's Banquet Hall, Union Street, Lynn, on Nov. 1, 1923, at 8 o'clock p. m. The papers of the evening were by Frank J. Babbitt, M.D.V., on "Rabies in Animals and Man"; followed by F. J. Macfarlane, D.D.S., who described his experiences as a member of the Commission of the College of Physicians and Surgeons in Its Researches Concerning Scurvy on The Labrador, illustrated by lantern slides.

WM. T. HOPKINS, *Reporter*.

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MEDICAL VETERANS' CLUB

A MEETING of the Medical Veterans' Club of Lawrence, Methuen, Andover and North Andover, was held at the Methuen Tavern, Thursday, Nov. 1, 1923, at 8:00 p. m.

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THE LAWRENCE MEDICAL CLUB

THE Monthly Meeting of the Club was held Monday evening, October 22, with Dr. F. S. Smith at 5 Third Street, North Andover.

The Chairman for the evening was Dr. Smith. Subject: Symptoms of Pulmonary Tuberculosis, by Dr. O. S. Pettingill of Middleton.

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News Items

ANNOUNCEMENT.—Dr. Seth M. Fitchet has opened his office at 270 Commonwealth avenue, Boston.

CAMBRIDGE HOSPITAL TRAINING SCHOOL FOR NURSES.—The graduating exercises of the Training School for Nurses of the Cambridge Hospital occurred Thursday evening, November 15, at 8.15 o'clock, Class of 1923, in Brattle Hall, Harvard Square.

DR. HOLT AT PEKING UNION MEDICAL COLLEGE.—Dr. L. Emmett Holt is on his way to the Orient to conduct a three-months' series of lectures as visiting professor of pediatrics to the Pekin Union Medical College. He also plans to make a survey of child health methods as practiced in various countries.

GIFT OF INSULIN TO THE UNIVERSITY OF PENNSYLVANIA.—John D. Rockefeller, Jr., has given $10,000 to the University of Pennsylvania to be used in the insulin treatment of a large number of ward and dispensary diabetic patients, and to teach the proper method of employing insulin to physicians in general practice.

DR. CRILE HONORED.—In recognition of his services in France with the Lakeside Hospital unit, Dr. George W. Crile, of Cleveland, has been decorated by the French government with the cross of the Legion of Honor. The ceremony took place at Lakeside Hospital, October 8, under the direction of General A. Dumont, military attaché of the French legation in Washington.

Dr. Crile was awarded the distinguished service cross in May, 1919, the citation relating that his researches and discoveries were the means of saving the lives of many wounded soldiers.—*The Ohio State Medical Journal.*

HISTORY OF THE MASSACHUSETTS MEDICAL SOCIETY.—Dr. Burrage's History of the Massachusetts Medical Society, which has received notice in these columns on several occasions during recent months, is approaching completion. The text and illustrations have been printed and the sheets are now in the bindery of the Plimpton Press at Norwood. When ready the books will be delivered at the Boston Medical Library, 8 The Fenway, the headquarters of the Society, for distribution to subscribers. In order to insure prompt delivery subscriptions should be sent to Mr. James F. Ballard, assistant librarian, at the Library. The books are to be sold at $6 a copy.

REMOVALS.—Dr. Henry E. Stone is now located at 810 Blue Hill Avenue, Dorchester, Mass.

Dr. Frederick W. Stetson has moved from Roxbury to 1696 Massachusetts Avenue, Cambridge.

Dr. Francis D. Randall, formerly of Malden, is now located at 599 Lambert Street, Tampa, Florida.

George L. Steele has moved from New York City to Springfield where he has an office at 6 Maple Street.

Albert A. W. Ghoreyeb has removed from Jaffa, Palestine, to Springfield, where his office is at 121 Chestnut Street.

WEEK'S DEATH RATE IN BOSTON.—During the week ending November 3, 1923, the number of deaths reported was 204, against 222 last year, with a rate of 13.81. There were 23 deaths under one year of age, against 30 last year.

The number of cases of principal reportable diseases were: Diphtheria, 68; scarlet fever, 53; measles, 32; whooping cough, 9; typhoid fever, 2, tuberculosis, 35.

Included in the above, were the following cases of non-residents: Diphtheria, 5; scarlet fever, 8; tuberculosis, 5.

Total deaths from these diseases were: Diphtheria, 6; typhoid fever, 1; tuberculosis, 10.

Included in the above, were the following cases of non-residents: Diphtheria, 1; tuberculosis, 2.

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Correspondence

THIRD CONGRESS OF THE FRENCH ASSOCIATION OF GYNECOLOGISTS AND OBSTETRICIANS

Geneva, Aug. 15, 1923.

Mr. Editor:

The French Association of Gynecologists and Obstetricians has just held its Third Congress at Geneva, August 9-11. In the absence of Dr. Jacobs of Bruxelles, president of the association, the vice-president, Professor Muret of Lausanne, opened the Congress, after which Dr. Bourcard of Geneva assumed the presidency.

The first séance could well have taken as a motto: *Mobilis in mobile.* Wrongly accused of being unstable, women frequently suffer from a defective anatomical equilibrium of her viscera, and it was this exaggerated mobility that was the subject discussed at the first séance. This subject is one of actuality and was discussed, as I well remember, at the International Congress of Gynecology, held in Geneva in 1896, when Pozzi of Paris and Küstner of Breslau were the reporters on the subject and therefore opened the discussion. *Quantum mutatus!*

This year the reporters were Proust (Paris) and Henneberg (Geneva), who introduced the question of the indications of surgical interference and technique in retrodeviations of the non-pregnant uterus, and, strange to say, with a few minor changes, the wise eclecticism of 1896 still presides over the operative indications in uterine displacements. Siredey (Paris) advised, in this domain, the old adage: "An ounce of prevention is worth a pound of cure."

The second day was given up to the very important question of pulmonary tuberculosis in pregnancy. It is perhaps to be regretted that tuberculosis specialists were not invited to attend this discussion, but Weymeersch of Bruxelles had the fortunate idea of associating Dr. Albrechts, secretary of the Bruxelles Tuberculosis League, in his researches, thus including in his report the opinions and support of a distinguished phthisiologist. Viron (Lyons) was supported in his rapport, after a most animated discussion, by Rossier (Lausanne), Thélin (Lausanne), Guerdjikoff and Châtillon (Geneva), Bar, Brindeau and Siredey (Paris), Schickele (Strasbourg) and others. The conclusions of this report were: (1) The treatment of the tuberculous pregnant woman should not be systematically either conservative or interventionist. (2) Treatment should be strictly medical when pregnancy has reached three or four months, no matter what may be the nature or type of the pulmonary lesions, or when the tuberculosis assumes a serious form or a distinctly congealed type of the process. (3) Interruption of pregnancy can only be countenanced when pregnancy has not gone beyond three months and the tuberculous process undergoing a frank evolution but to be regarded as curable.

On the third day, Rapin (Lausanne) presented a very logical and thoroughly documented report on the procedures of anesthesia in labor. Henry IV of France said that his mother gave birth to him while singing. What happy days! Today, it is the duty of the profession to mitigate the disagreeable impressions of parturition. Our twentieth century nerves are no longer content with harmony, and since this is the case, it is rational to attempt to relieve them, and this the Congress strived to do by discussing the means of attenuating the pains of labor. And at the same time relief from pains may render delivery easier and quicker, a fact maintained by Balard (Bordeaux), van Rooy (Amsterdam), Hamm (Strasbourg), Brindeau (Paris), and other speakers.

After this discussion, Schickele (Strasbourg) read his report on the procedures of anesthesia in gynecology, being decidedly in favor of local and regional anesthesia. J. L. Faure (Paris) was entirely for general anesthesia, and then a very gallant tournament took place between Koenig (Geneva), Audebert (Toulouse), Muret (Lausanne) and Bourcart (Geneva), the battle being followed by a treaty of peace which was signed without difficulty.

Many other individual papers deserve lengthy mention, but I can only refer to the important one by Kotzareff (Geneva), on his results of his researches on the serum of cancer patients), that of Buman (Fribourg, Switzerland) on uterine hemostasis, and Beuttner (Geneva) on the vermiform appendix and its relations to the surrounding viscera.

It is hardly necessary to say that banquets, receptions and excursions were given with that great hospitality of the Swiss that is proverbial, and with a cloudless sky and sunshine, with the beautiful lake and the majestic Mont Blanc looming in the distance contributed not a little to the success of a most successful Congress.

Charles Greene Cumston,
Lecturer in the University of Geneva.

THE MILK SITUATION IN NEW BEDFORD

November 5, 1923.

Mr. Editor:

The pride of New Bedford has been touched by the article of Dr. Joseph Garland on the survey of the milk problem in Massachusetts which was published in the Boston Medical and Surgical Journal of October 18.

In his story of the milk situation of Massachusetts, Dr. Garland has chosen seven representative cities to illustrate the quality and quantity of milk produced and dispensed. He informs that New Bedford is totally without milk that is registered as certified. It is to this fact that I take exception and most strenuously so, because it is to a New Bedford organization that the credit of being the first city in Massachusetts to legally authorize the production of certified milk belongs.

New Bedford was one of the early cities to receive a medical milk commission. An organization of physicians including Drs. W. A. Nield, C. A. Pratt, A. H. Mandell, and C. R. Hunt was given this commission on October 11, 1911. Prior to this time, there was a considerable amount of milk that was labelled certified, but there did not exist a standard of certification as authorized by law. Through the untiring efforts of Rev. W. B. Geoghegan and the New Bedford Milk Commission, such a certification of milk was definitely and legally established.

Late in the year of 1911, Walter A. White, a milk producer of New Bedford, was legally privileged to produce and dispense milk as certified and according to all information obtainable, he possesses the distinction of being the first dairyman in Massachusetts to have been accorded that right as governed by the certified milk statute.

At present, 400 quarts of certified milk are produced and dispensed to from 250 to 350 families daily by the Birchfield Farm of New Bedford. This milk is sold at from 17 to 20 cents per quart and in spite of this low charge, Lawrence Grinnell realizes a yearly profit of from $1,500 to $3,000 on a herd of 40 to 60 cows.

These facts lead me to suggest that New Bedford is not only doing its share toward eradicating bovine tuberculosis, but they also indicate that dairymen who find it difficult to make the production of certified milk a paying business might gain much by a study of the methods used here.

Respectfully yours,
Charles S. Lipsitt, M.D.
283 Pleasant Street, New Bedford, Mass.

Note: The information concerning New Bedford's milk supply was derived from the Board of Health of that city. Although asked for, no figures on certified milk were given.—J. G.

PHYSICIANS' LIABILITY INSURANCE FOR MEMBERS OF THE MASSACHUSETTS MEDICAL SOCIETY

November 6, 1923.

We have received a few inquiries regarding the present status of the plan, and we would like to acquaint the members, through the Journal, with the facts. Evidently there is some misunderstanding.

New individual policies which comply with the wishes of the Insurance Department and the Attorney General, have been mailed to the members, renewing this insurance for one year from November 10. The Attorney General's ruling in no way affects the validity of the contract or the responsibility of the Company to protect the members for suits brought against them for work done during the term of last year's policy.

A $25,000 suit brought against one of the members has recently been closed without payment of indemnity, and vindication for our doctor when the claimant's attorney realized the Company was prepared to fight the claim.

Another case, after five days' trial, was won when the court rendered its decision in favor of the defendant.

The success of our proposition is shown by the reduction in rates we have been able to obtain for the members. This is due to their coöperation which is already showing its results. In 1921 the rates were for $10,000 to $30,000—$45. Under the Group $10,000 to $30,000 cost $28. Under the new individual policy for members only, $10,000 to $30,000 cost $21. Higher limits of $15,000 to $30,000 at $31.50 are advised for some of the specialties. These rates apply to all members except the X-Ray Specialist, which rates are as follows:

Diagnosing only, $10,000 to $30,000—$50 and $10 for each technician.

Diagnosing and Treating, $10,000 to $30,000—$75 and $10 for each technician.

The insuring Company having over $36,000,000 assets is financially able to stand back of its contract.

Approximately 1400 members are coöperating with us and we are endeavoring to give the best service possible. If the members have any suggestions or criticism they will be gratefully received.

We take this opportunity to extend to the members our appreciation for their hearty coöperation and support, and we are willing and ready at all times to give them information regarding this plan.

Very truly yours,

George H. Crosbie,
Clarence T. Macdonald,
Special Representatives of the United States Fidelity and Guaranty Company of Baltimore.

STANDARDS FOR PHYSIOTHERAPISTS

Mr. Editor:

I am enclosing a pamphlet sent to me by a gentleman who has received treatment at my office. The pamphlet suggests that the Board of Health of Boston might give a sanity test to those who apply for licenses to practise massage.

The American Physiotherapy Association requires that its members have proper training and must subscribe to ethical standards. I wish that such a standard could be adopted by our local governing board.

Yours sincerely,
Thomas Burns.

THE DEPARTMENT OF PHYSIOLOGY HARVARD MEDICAL SCHOOL

October 24, 1923.

Dr. Enos H. Bigelow,
Framingham Centre, Mass.

Dear Dr. Bigelow:

I am sending herewith a letter just received from the Secretary of the American Friends' Service Committee. Do you know whether any organized effort has been made in the Massachusetts Medical Society to supply aid to physicians in Russia? If not, has President Wilbur taken steps which might be effective? I should be glad to know about possibilities in that direction.

Yours very truly,
W. B. Cannon.

[Note: We do not know of any organized effort by any medical society. This Journal has published notice of appeals.]

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DEATH NOTICES

Word has been received of the death in Kansas City, Mo., of Dr. John Walter Perkins, formerly of Boston, on November 2, 1923, at the age of sixty-three.

Dr Perkins was a graduate of Harvard College, in the class of 1882, and of Harvard Medical School four years later, having served as surgical house officer at the Boston City Hospital previous to taking his M.D. degree. He joined the Massachusetts Medical Society in 1886, resigning in 1899 when he had become surgeon to the Union Pacific Railway and professor of surgery and operative surgery in the Kansas City Medical College. He had many friends in the east and will be much missed.

Dr. Albert John Adams Hamilton died of cerebral hemorrhage at his home in Boston, November 7, 1923, at the age of forty-three.

Dr. Hamilton was a native of Quebec, coming to the United States at the age of sixteen and studying at the University of Vermont, and at the University of Pennsylvania, where he took his M.D. in 1906 From 1907 to 1910 he was resident surgeon at the Carney Hospital, South Boston, and since then had practised surgery in Boston.

Dr. Hamilton was a 32d degree Mason, a member of the American Medical Association, the Massachusetts Medical Society, the Boston Athletic Association, and the Algonquin Club. He was much interested in golf and in hunting. In 1910 he married Margaret Bresnahan who divorced him three years later.

NOTICES

The Boston Medical History Club will meet at the Boston Medical Library, Monday, November 19, at 8.15 p. m.

"Carl Weigert," Dr. H. Morrison.

"A Chapter from the Life and Letters of Wm. Osler," Dr. Harvey Cushing.

"Some further material with reference to Dr. Benj. Church," Dr. T. Leary.

Light refreshments after the meeting.

Future meetings will be held on the third Monday of each month: December 17, January 21, February 18, March 17, April 21.

John W. Cummin, M.D., *Secretary.*

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

The next regular meeting of the Essex South District Society will be held Wednesday, November 21, at the Beverly Hospital. Dr. F. Gorham Brigham will speak on Insulin. At 5 p. m. there will be demonstrations by members of the staff. At 7 p. m. dinner will be served, followed by Dr. Brigham's address.

The tentative program for the rest of the year is as follows: Salem Hospital, December 12, 1923; Lynn Hospital, January 23, 1924; Gloucester Hospital, March 19, 1924. Annual meeting Relay House, Nahant, May 7, 1924, in conjunction with Lynn Medical Fraternity.

R. E. Stone, *Secretary.*

THE NEW ENGLAND OTOLOGICAL AND LARYNGOLOGICAL SOCIETY

The regular meeting of the society will be held on Tuesday, November 27, at the Boston Medical Library, 8 The Fenway, at 8 p. m.

4.30 p. m.—Clinical meeting at the Massachusetts Charitable Eye and Ear Infirmary. Demonstration of cases under the direction of the staffs of the Massachusetts Charitable Eye and Ear Infirmary and the Massachusetts General Hospital Throat Department.

8 p. m.—Regular meeting. Program:

The speaker of the evening will be Dr. Joseph E. J. King, New York. Subject: "The Treatment of Brain Abscess by Unroofing and Temporary Herniation of Abscess Cavity with the Avoidance of Usual Drainage Methods." The discussion will be opened by Dr. Harris P. Mosher, Boston.

"Personal Observations in Germany, with Special Reference to the Medical Profession," Dr. George Loring Tobey, Jr.

Refreshments.

Frank E. Kittredge, *President.*

John H. Blodgett, *Secretary,*
390 Commonwealth Avenue, Boston.

SPECIAL NOTICE

The Boston Medical Library, permanent headquarters of The Massachusetts Medical Society, 8 The Fenway, Boston, desires contributions of books, periodicals, pamphlets, medical photographs and autographs, and whatever relates to medicine. Do not throw away or sell for junk anything of a medical or scientific nature, no matter how worthless it may seem, without first giving the Library the privilege of examination.

DISEASES REPORTED TO MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Week Ending November 3, 1923

Disease	*No. of Cases*	*Disease*	*No. of Cases*
Anterior poliomyelitis	14	Scarlet fever	197
Chicken-pox	174	Septic sore throat	4
Diphtheria	301	Suppurative conjunctivitis	12
Dog-bite requiring antirabic treatment	5	Syphilis	39
Encephalitis lethargica	4	Tetanus	2
Epidemic cerebrospinal meningitis	3	Trachoma	1
German measles	7	Tuberculosis, pulmonary	93
Gonorrhea	123	Tuberculosis, other forms	17
Influenza	4	Typhoid fever	21
Measles	263	Whooping-cough	107
Mumps	81	Hookworm	1
Ophthalmia neonatorum	24	Leprosy	1
Pneumonia, lobar	68		

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SOCIETY MEETINGS

DISTRICT SOCIETIES

Suffolk District Medical Society:

December 19, 1923:—Meeting of Medical Section at the Boston Medical Library at 8.15 p. m.

January 30, 1924:—In association with the Boston Medical Library and the Middlesex South District Medical Society at the Boston Medical Library at 8.15 p. m.

February 27, 1924:—Meeting of Surgical Section, in association with the Middlesex South District at the Boston Medical Library at 8.15 p. m.

March 26, 1924:—Meeting of the Medical Section, in association with the Boston Association for the Prevention and Relief of Heart Disease, at the Boston Medical Library at 8.15 p. m.

April 30, 1924:—Annual Meeting, to be held at the Boston Medical Library at 8.15 p. m.

Worcester District:—The meetings for the year are as follows:

December 12 in Worcester. Papers by Dr. Fred B. Lund of Boston and Dr. Michael F. Fallon and Dr. Walter Seelye of Worcester.

January 9 at St. Vincent Hospital, Worcester.
February 13 at Memorial Hospital, Worcester.
March 13 at City Hospital, Worcester.
April 10—A public meeting.
May 8—Annual Meeting.

Norfolk South District:—Meetings first Thursday of each month at 11.30 a. m., December, January, February, March, April and May, at United States Hotel, Boston. The February and May meetings are stated meetings.

Essex North:—Semi-annual meeting at Haverhill, January 2, 1924. Annual meeting at Lawrence General Hospital, May 7, 1924.

Franklin District:—Society meets at Greenfield the second Tuesday of January, March, May, July, September. Annual Meeting **in May.**

Middlesex South District Medical Society:

December, 1923:—Hospital Day, probably at the Cambridge Hospital.

January 30, 1924:—Combined meeting with Suffolk District at the Boston Medical Library.

February 27, 1924:—Combined meeting with the Surgical Section of Suffolk District at the Boston Medical Library.

March, 1924:—Hospital meeting; place not yet determined.

April, 1924:—Annual meeting.

Hampden District:—The meetings for the year are as follows:

January, 1924, at Springfield. April, 1924, at Springfield. Annual Meeting.

Bristol South District Medical Society:

The Annual Meeting will be held in New Bedford, May 1, 1924.

Hampshire District Medical Society:

Meetings held bi-monthly, the second Wednesday in the month, at Boyden's Restaurant, Northampton.

STATE, INTERSTATE AND NATIONAL SOCIETIES

Schedule of meetings of the New England Dermatological Society:

Wednesday, December 12, 1923, at 3 p. m., in the Surgical Amphitheatre, Boston City Hospital.

Wednesday, February 13, 1924, at 3 p. m., in the Skin Out-Patient Department, Massachusetts General Hospital.

Wednesday, April 9, 1924, at 3 p. m., in the Surgical Amphitheatre, Boston City Hospital.